



September 11, 2015  
Project No. 8128.01.08

Mr. Dana Bayuk  
Oregon Department of Environmental Quality  
Northwest Region  
700 NE Multnomah Street, Suite 600  
Portland, Oregon 97232

Re: WS-47-183 Monitoring Well Installation Report—Siltronic Corporation, 7200 NW  
Front Avenue, Portland, OR—ECSI No. 183

Dear Mr. Bayuk:

On behalf of Siltronic Corporation (Siltronic), Maul Foster & Alongi, Inc. has prepared this letter summarizing the installation of monitoring well WS-47-183 for the Siltronic facility located at 7200 NW Front Avenue in Portland, Oregon (see the attached figure).

## **BACKGROUND**

In its letter regarding *Abandonment of the WS-11 and WS-14 Monitoring Well Clusters and Installation of a Deep Monitoring Well*, dated September 18, 2014, the Oregon Department of Environmental Quality (DEQ) directed that the above-referenced monitoring well be installed. In summary, DEQ required the installation of a monitoring well to replace two deep wells (WS-11-161 and WS-14-161) that had recently been proposed for decommissioning. Monitoring wells WS-11 and WS-14 were decommissioned in January and February 2015. DEQ proposed that the replacement well be used to monitor groundwater levels and chemistry data. Correspondence related to the well installation is provided in Attachment A.

## **MONITORING WELL INSTALLATION**

Public and private utility-locating services were used to check for subsurface obstructions and utilities before well installation drilling activities began at WS-47-183. An air knife was used to a depth of 10 feet below ground surface (bgs) to verify clearance from potential subsurface obstructions. The fieldwork related to the drilling of WS-47-183 began on April 7, 2015, and ended on April 16, 2015. Cascade Drilling, L.P. (Cascade), of Clackamas, Oregon, performed the monitoring well drilling and installation, using a rotosonic drilling rig.

During drilling, Cascade advanced a core barrel sampler for soil retrieval and logging purposes. The soil boring was continuously logged during drilling. A photoionization detector was used to collect headspace readings. Soil samples were collected from

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approximately 145 feet bgs to 183 feet bgs for grain size analysis following the American Society for Testing and Materials D422 method (Attachment B). The grain size analysis results are summarized in Table 1.

**Table 1**  
**Grain Size Analysis Results**

Sample	Depth (feet bgs)	Soil Description
WS47-SO-145-147	145-147	sand: 1% clay, 2% silt, 97% sand
WS47-SO-147-150	147-150	sandy loam: 6% clay, 43% silt, 51% sand
WS47-SO-150-153	150-153	sand: 7% clay, -2% silt, 95% sand
WS47-SO-169	169	silt loam: 8% clay, 59% silt, 33% sand
WS47-SO-163-183	163-183	sand: 7% clay, 2% silt, 91% sand

A survey was completed by Minister & Glaeser Surveying, Inc., on April 24, 2015. The survey results are summarized in Table 2.

**Table 2**  
**WS-47-183 OSPCS Coordinates**

<b>Northing</b>	705154.36
<b>Easting</b>	7624602.80
<b>Top of Casing Elevation (NGVD 29-47)</b>	32.69 feet
NOTES: NGVD = National Geodetic Vertical Datum. OSPCS = Oregon State Plane Coordinate System.	

The monitoring well boring log with well construction details is in Attachment C. The well was constructed using 2-inch-diameter, flush-threaded, Schedule 40 polyvinyl chloride blank riser pipe and 2-inch-diameter, flush-threaded, stainless steel well screen with 0.010-inch slots. The 10-foot well screen interval extends from 172 to 182 feet bgs. Methods and equipment were consistent with recently approved work plans, applicable well construction standards, and an Oregon Water Resources Department (OWRD) variance (i.e., special standard request approval). The approved special standard request, which is included in Attachment D, was to use bentonite-organoclay grout at elevations corresponding to where manufactured gas plant (MGP) waste dense, nonaqueous-phase liquid (DNAPL) was observed during drilling. Consistent with previous installations, a casing-reduction-and-seal approach was used to minimize the potential for contaminant drag-down.

Monitoring well WS-47-183 was completed to 183 feet bgs. Monitoring well WS47-183 is identified by OWRD as well log ID “MULT 119380,” start card number 1025931, and well identification number L115779 (Attachment E).

### MONITORING WELL DEVELOPMENT

Monitoring well WS-47-183 development was conducted between April 28 and 30, 2015. The stabilized water quality parameters are presented in Table 3 and the well development field forms are in Attachment F. The entire vertical screened interval was developed at 1-foot intervals, using an inertial pump and a surge block. A submersible pump was used to purge additional groundwater at a faster rate following surging. The total volume of water removed was 1,380 gallons, which is representative of the volume of potable water added during drilling and ten bore volumes. The depth to water following development was 26.05 feet bgs. MGP waste DNAPL was not observed in WS47-183 before, during, or after monitoring well development.

**Table 3**  
**WS-47-183 Well Development Details**

<b>Top of Casing Elevation (NGVD 29-47)</b>		32.69 feet
<b>Depth to Water after Development</b>		26.05 feet
<b>Date of Water Level Elevation Measurement</b>		5/4/2015 at 11:29am
<b>Stabilized Water Quality Parameters</b>	pH (SU)	6.84
	Specific conductance (uS/cm)	644
	Temperature (°C)	15.62
	Turbidity (NTU)	1.28
	Dissolved oxygen (mg/L)	0.05
	Oxidation reduction potential (mV)	-115.3
NOTES: °C = degrees Celsius. mg/L = milligrams per liter. mV = millivolts. NTU = nephelometric turbidity units. SU = standard units. uS/cm = microsiemens per centimeter.		

### INVESTIGATION-DERIVED WASTE

Materials generated during the monitoring well drilling, installation, and development were characterized and managed consistent with the procedures established for investigation-derived waste generated in the TCE Contaminated Material Management Area, as necessary.

The waste characterization laboratory analytical reports are included in Attachment G, and waste disposal manifests are included in Attachment H.

## SAMPLING PLAN

Northwest Natural (NWN) will be performing the sampling of WS-47-183. The data objectives and monitoring plan into which WS-47-183 will be integrated are presented in NWN's *Hydraulic Control and Containment System Capture Performance and Monitoring Plan* prepared by Anchor QEA, LLC, on May 1, 2015. Groundwater elevation data will be collected from the well, using a transducer provided by NWN or its contractors. NWN installed a transducer in WS-47-183 during the week of May 11, 2015.

Please call or e-mail if you have any questions regarding this submittal.

Sincerely,

Maul Foster & Alongi, Inc.

  
Kerry-Cathlin Gallagher  
Project Scientist

  
James G.D. Peale, RG  
Principal Hydrogeologist

Attachments: Figure  
A—DEQ Correspondence  
B—Grain Size Analysis (on CD)  
C—Monitoring Well Completion Log  
D—OWRD Special Standards (on CD)  
E—OWRD Well Log  
F—Well Development Field Form  
G—Waste Characterization Laboratory Analytical Reports (on CD)  
H—Waste Disposal Manifests (on CD)

cc (electronic): Myron Burr, Siltronic Corporation  
Ilene Gaekwad, Davis Rothwell Earle & Xochihua, P.C.  
William Earle, Davis Rothwell Earle & Xochihua, P.C.  
Chris Reive, Jordan Ramis  
Keith Johnson, DEQ  
Henning Larsen, DEQ  
Joel Jeffery, OWRD  
Sean Sheldrake, USEPA  
Rich Muza, USEPA

Dana Bayuk  
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Lance Peterson, CDM Smith  
Scott Coffey, CDM Smith  
Bob Wyatt, NW Natural  
Patty Dost, Pearl Legal Group, LLC  
John Edwards, Anchor QEA, LLC  
John Renda, Anchor QEA, LLC  
Rob Ede, Hahn and Associates, Inc.

FIGURE





Source: Aerial photograph obtained from Esri ArcGIS Online.

Note:  
Locations are approximate  
and shown for reference only.



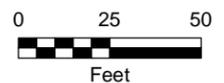
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### Legend

- Geoprobe Location
- NW Natural Well
- WS-47-183 Monitoring Well
- Abandoned Siltronic Monitoring Well
- ◆ TarGOST Boring
- Siltronic Tax Lot

**Figure  
Monitoring Well  
WS-47-183 Location**

Siltronic Corporation  
Portland, Oregon



# ATTACHMENT A

DEQ CORRESPONDENCE





# Oregon

John A. Kitzhaber, MD, Governor

## Department of Environmental Quality

Northwest Region Portland Office

2020 SW 4<sup>th</sup> Avenue, Suite 400

Portland, OR 97201-4987

(503) 229-5263

FAX (503) 229-6945

TTY (503) 229-5471

September 18, 2014

*Also Sent Via E-mail*

Mr. Myron Burr  
Siltronic Corporation  
7200 Front Avenue, M/S 30  
Portland, OR 97210-3676

**Re: Abandonment of the WS-11 and WS-14 Monitoring Well Clusters and Installation of a Deep Monitoring Well  
Siltronic Corporation Facility  
Portland, Oregon  
ECSI No. 183**

Dear Mr. Burr:

The Oregon Department of Environmental Quality (DEQ) reviewed the “Revised Monitoring Wells WS-11 and WS-14 Abandonment Plan - Siltronic Corporation, 7200 NW Front Avenue, Portland, OR – ECSI No. 183” dated July 25, 2014 (Revised Abandonment Plan). The Revised Abandonment Plan provides the approach Siltronic Corporation (Siltronic) proposes using to abandon the WS-11 and WS-14 nested double-completion monitoring well clusters. Maul Foster and Alongi, Inc. (MFA) prepared the Revised Abandonment Plan on behalf of Siltronic.

The primary purpose of this letter is to inform Siltronic that DEQ:

- Approves the Revised Abandonment Plan subject to the document being revised as indicated in this letter; and
- Requires a monitoring well to be drilled and constructed in the vicinity of the WS-11 cluster to replace the two deep installations being abandoned.

DEQ’s condition for approving the Revised Abandonment Plan and additional information regarding drilling and installing the deep monitoring well are provided below.

### **Abandonment of the WS-11 and WS-14 Monitoring Well Clusters**

DEQ approves the Revised Abandonment Plan subject to the condition that the document be revised to include the following steps:

- In addition, to checking for the presence of dense non-aqueous phase liquid (DNAPL) and measuring its thickness in each of the four monitoring wells, where present DNAPL will be removed to the maximum extent practicable before abandonment work is initiated.
- Unless DNAPL is detected in monitoring well WS-11-161, the WS-11 monitoring well cluster will be overdrilled to a minimum of 5-feet below the bottom of the filter pack for WS-11-161 to ensure the complete removal of casing, screen, and sand from the borehole. In the event DNAPL is detected in WS-11-161 Siltronic will follow the overdrilling procedure for

the WS-14 monitoring well cluster.

- The WS-14 monitoring well cluster will be overdrilled to a minimum depth of 15-feet below the bottom of the filter pack for WS-14-161. The material retrieved from below the bottom of the filter pack will be visually inspected for evidence of DNAPL. Absent visual evidence of DNAPL, sealing of the borehole will proceed. If evidence of DNAPL is observed then the boring will be advanced ten additional feet and the material from the bottom of the borehole will be inspected for evidence of DNAPL. This process should be repeated until no evidence of DNAPL is observed at which time borehole sealing will proceed.
- Consistent with site-specific requirements for preparation and use, organoclay-bentonite sealant will be used throughout the depth intervals where available information (e.g., boring logs, TarGOST® logs, observations made during abandonment work) provides evidence of DNAPL occurrence.
- Use of the organoclay-bentonite mix will be documented in detail. Documentation should include but is not limited to, Siltronic providing the basis for identifying the depth interval(s) where the organoclay-bentonite sealant was used; mud-weight measurements for each volume of slurry mixed and pumped downhole; the total volume of slurry used; and the estimated depth of slurry placement.
- The remaining portions of the borehole should be sealed using materials consistent with the requirements of OAR 690-240-510.
- Well abandonment materials will be characterized and managed consistent with the procedures established for investigation derived waste generated within the TCE Contaminated Material Management Area.
- Siltronic will submit the report documenting abandonment work within 45-days of completing work in the field.

The Revised Abandonment Plan should be revised to include the information indicated above and submitted to DEQ on or before October 6, 2014.

### **Replacement Monitoring Well Drilling and Installation**

DEQ requires that Siltronic drill and install a deep monitoring well in the vicinity of the WS-11 monitoring well cluster to replace the two deep installations being abandoned. The replacement well will be used to monitor groundwater levels and chemistry in the deep Lower Alluvium WBZ beneath the "deep aquitard." The data from the installation will be used to further evaluate water level differences between the upper Lower Alluvium water-bearing zone (WBZ) and deep Lower Alluvium WBZ, and groundwater chemistry in the deep Lower Alluvium WBZ. The monitoring well will also be incorporated into Alluvium WBZ hydraulic control and containment system performance monitoring program.

The replacement monitoring well should be constructed in a separate borehole from the WS-11 double-completion installation. The replacement monitoring well should be drilled to a depth that ensures that the top of the filter pack is below the bottom of the deep aquitard. Before field work begins, Siltronic should submit a work plan for drilling and installing the monitoring well for DEQ's review and approval. The plan should include information regarding the proposed

Mr. Myron Burr  
Siltronic Corporation  
September 18, 2014  
Page 3 of 3

location, projected depth and basis, drilling methodology, and construction methodology and materials. DEQ requests that Siltronic submit the deep monitoring well drilling and installation plan for our review on or before October 20, 2014.

Please contact me with questions regarding this letter.

Sincerely,

Dana Bayuk

Cc: Alan Gladstone, Davis Rothwell Earle and Xochihua  
Bill Earle, Davis Rothwell Earle and Xochihua  
Chris Reive, Jordan Ramis  
James Peale, MFA  
Kerry Gallagher, MFA  
Bob Wyatt, NW Natural  
Patty Dost, Pearl Legal Group  
John Edwards, Anchor QEA, LLC  
John Renda, Anchor QEA, LLC  
Rob Ede, Hahn & Associates, Inc.  
Sean Sheldrake, EPA  
Rich Muza, EPA  
Lance Peterson, CDM Smith  
Scott Coffey, CDM Smith  
Kris Byrd, Oregon Water Resources Department  
Keith Johnson, NWR/C&SA  
Tom Gainer, NWR/C&T  
Henning Larsen, NWR/C&T  
ECSI No. 183 File

## Kerry Gallagher

---

**From:** BAYUK Dana <BAYUK.Dana@deq.state.or.us>  
**Sent:** Friday, March 06, 2015 4:38 PM  
**To:** James Peale  
**Cc:** 'Burr, Myron'; 'Gaekwad, Ilene M. (igaekwad@davisrothwell.com)'; Earle, William G. (WEARLE@davisrothwell.com); Kerry Gallagher; Bob Wyatt; Patty Dost; John Edwards; Ben Hung; John Renda; Sean Sheldrake (sheldrake.sean@epa.gov); 'Peterson, Lance'; Coffey, Scott; 'Gamache, Matthew'; GAINER Tom; LARSEN Henning  
**Subject:** RE: replacement well installation approach

**Follow Up Flag:** Follow up  
**Flag Status:** Completed

Good afternoon James.

DEQ reviewed the February 4, 2015 e-mail (see below) you sent that summarizes our telephone conversation on January 23, 2015. During the January 23rd call we further discussed the details of drilling and installing a new monitoring well in the Deep Lower Alluvium water-bearing zone (WBZ). Maul Foster Alongi initially described the approach to drilling and installing the monitoring well in an e-mail dated October 9, 2014 (see below).

The new monitoring well will replace monitoring wells WS-11-161 and WS-14-161 that were recently decommissioned by removal.

Based on our review of the February 4<sup>th</sup> and October 9<sup>th</sup> e-mails, DEQ approves drilling and installation of the new Deep Lower Alluvium WBZ monitoring well consistent with steps 1 through 4 of the February 4th e-mail combined with steps 1 through 3 of the October 9th e-mail.

DEQ's approval is subject to the following clarifications:

- Samples of alluvium will be collected continuously from approximately 135-feet below ground surface (bgs) to the bottom of the borehole for grain-size testing; and
- Centralizers should be used above the well screen and along the monitoring well casing to ensure the installation is centered in the borehole during placement of the sand-pack and sealing of the 6-inch borehole.

DEQ intends to observe the drilling and sampling work and requests that Siltronic inform us as early as practicable of the field schedule so we can make arrangements to be available. DEQ is especially interested in observing drilling and sampling conducted after the 10-inch casing is set and drilling of the 8-inch borehole begins.

James, I appreciate the time you and Kerry spent discussing the scope of the drilling and sampling work associated with installing the new Deep Lower Alluvium WBZ monitoring well.

Feel free to contact me with questions regarding this e-mail and I hope you have a good weekend.

Mr. Dana Bayuk, Project Manager  
NW Region Cleanup & Site Assessment Section  
Oregon Department of Environmental Quality  
2020 SW 4th Avenue, Suite 400  
Portland, OR 97201  
E-mail: bayuk.dana@deq.state.or.us

Phone: 503-229-5543  
FAX: 503-229-6899

Please visit our website at <http://www.oregon.gov/DEQ/>

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-----Original Message-----

From: James Peale [mailto:jpeale@maulfoster.com]

Sent: Wednesday, February 04, 2015 4:28 PM

To: BAYUK Dana

Cc: 'Burr, Myron'; 'Gaekwad, Ilene M. (igaekwad@davisrothwell.com)'; Earle, William G. (WEARLE@davisrothwell.com); Kerry Gallagher

Subject: FW: replacement well installation approach

Good afternoon Dana -

On January 23, 2105, we spoke regarding the email originally forwarded (below). DEQ's comments and subsequent modifications to the well installation approach are summarized as follows. Depths and distances are approximate.

1) Location to be within approximately 20 feet of WS11, towards WS14, to the extent practicable given other surface installations and access. The location will be airknifed to 10 ft bgs per Siltronic protocol for clearing utilities.

2) Set an additional 10" conductor casing for stepdown at approximately 35-38 feet, with a bentonite seal.

3) Reminder to use organoclay consistent with abandonment observations. Reminder to ensure decontamination of downhole equipment as appropriate.

4) Request for grain size analysis above, within and below observed aquitard. MFA will collect samples for grain size analysis starting at 135 ft bgs and continuing down to 165-170 ft bgs, capturing the differences in grain size.

5) DEQ requested the table originally sent be modified to show the depth of the silt in WS14 extending to 148ft bgs. That table has been modified and is attached.

Please don't hesitate to call or email if you have any questions. Because these were the only issues we identified during the call, we will move forward with scheduling the work subject to rig availability, and will inform DEQ once a schedule has been set.

jp

JAMES G.D. PEALE RG, LHG | MAUL FOSTER & ALONGI, INC.

d. 503 501 5218 | p. 971 544 2139 | c. 503 449-9576 | f. 971 544 2140 | [www.maulfoster.com](http://www.maulfoster.com)  
2001 NW 19th Avenue, Suite 200, Portland, OR 97209

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-----Original Message-----

From: James Peale

Sent: Thursday, October 09, 2014 3:55 PM

To: BAYUK Dana (BAYUK.Dana@deq.state.or.us)

Cc: Alan Gladstone; Gaekwad, Ilene M. (igaekwad@davisrothwell.com); Burr, Myron; Earle, William G. (WEARLE@davisrothwell.com); Kerry Gallagher

Subject: replacement well installation approach

Dana -

The following summarizes the approach for installing the replacement monitoring well on the Siltronic property. The approach, methods and equipment are based upon work previously completed and data previously collected during installation and monitoring.

#### Location

Based on DEQ direction, we understand that the replacement well (WS-47-170, where 170 represents the total depth of the well construction, to be determined) should be located generally between 11 and 14. Available drilling locations near 14 are quite constrained, such that the well will likely be located on the riverbank, closer to WS11.

#### Screen Interval

Based on DEQ direction, we understand that the top of the screened interval should be below the aquitard or lower permeability layer identified in borings 11 & 14 and shown on the annotated figure 2-3c attached. The screen interval will be 10 ft. The presence, depth, and thickness of this layer will need to be determined during drilling. Based on previous borings, we anticipate the depth of this layer to occur between 143 and 152 ft BGS, with a thickness of at least 2 ft. Based on the observations made during completion of these borings, we anticipate that the layer could consist of:

. SILT with SAND (ML); dark gray; 70% fines, low to medium plasticity; 30% sand, fine to medium, sand in pockets; micaceous; organic debris; wet.

. SILT (ML); gray; 100% fines, medium to high plasticity; trace sand; moist.

These observations and information regarding WS11 and WS14 are included in the attached table.

#### Well construction

The well will be drilled and installed using a truck mounted sonic rig. Consistent with previous installations, a casing reduction and seal approach will be utilized to minimize the potential for contaminant dragdown into the targeted screen interval. Consistent with DEQ, direction, we evaluated three lines of evidence indicating the presence of contamination in the overlying alluvium and fill units:

- . TarGOST borings TG1S, TG-12S, TG-PW2-130
- . Observations of sheen, staining, NAPL, or odors during drilling of WS-11 and WS-14
- . Reconnaissance groundwater sampling data for VOCs during drilling of WS-11 and WS-14
- . DNAPL entry in WS-11 and WS-14 wells

The vertical extent of these data are shown on the attached figure, and indicate that MGP impacts are fairly consistent throughout the alluvium. As such, the data indicate that setting multiple casings above the aquitard is not warranted. These data also confirm that the aquitard or low-permeability zone is not limiting the vertical extent of groundwater impacts to the alluvium.

Based on the data, we recommend the following procedures:

- 1) Drill/sample and set 8" casing from surface to aquitard/low permeability layer anticipated to be present at 143-152 ft bgs.
- 2) Set seal within aquitard zone to prevent potential future migration of MGP DNAPL into the replacement well screen
- 3) Continue drilling with 6" to allow installation of 10-ft long screen with a minimum seal distance of 3 ft between bottom of aquitard layer and upper elevation of filter pack

Methods and equipment will otherwise be consistent with recently approved workplans and relevant well construction standards.

Please let me know if you have any questions or comments regarding this email.

jp

JAMES G.D. PEALE RG, LHG | MAUL FOSTER & ALONGI, INC.

d. 503 501 5218 | p. 971 544 2139 | c. 503 449-9576 | f. 971 544 2140 |  
www.maulfooster.com<<http://www.maulfooster.com/630-james-peale>>  
2001 NW 19th Avenue, Suite 200, Portland, OR 97209

LinkedIn<<http://www.linkedin.com/in/jpeale/>>

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## Kerry Gallagher

---

**From:** James Peale  
**Sent:** Monday, April 13, 2015 2:43 PM  
**To:** John Renda; Dana Bayuk; Larsen.henning@deq.state.or.us  
**Cc:** Burr, Myron; Earle, William G. (WEARLE@davisrothwell.com); Chris Reive (Chris.Reive@jordanramis.com); Gaekwad, Ilene M.; Kerry Gallagher; John Edwards; Kelly Titkemeier; Bob Wyatt; Patty Dost; Ben Hung  
**Subject:** RE: Siltronic - Status of WS-47 Installation

John –

Dana and I discussed the well installation approach and objectives this morning. We were directed to continue drilling below 163 ft bgs with the objective of installing a screen well below the MGP impacts noted in the description below. We currently anticipate the top of screen will be below 170 ft bgs.

jp

**JAMES G.D. PEALE** RG, LHG | MAUL FOSTER & ALONGI, INC.

d. 503 501 5218 | p. 971 544 2139 | c. 503 449-9576 | f. 971 544 2140 |  
2001 NW 19th Avenue, Suite 200, Portland, OR 97209

[LinkedIn](#)

<http://www.maulfooster.com>



---

**From:** John Renda [mailto:jrenda@anchorqea.com]  
**Sent:** Monday, April 13, 2015 2:26 PM  
**To:** James Peale; Dana Bayuk; Larsen.henning@deq.state.or.us  
**Cc:** Burr, Myron; Earle, William G. (WEARLE@davisrothwell.com); Chris Reive (Chris.Reive@jordanramis.com); Gaekwad, Ilene M.; Kerry Gallagher; John Edwards; Kelly Titkemeier; Bob Wyatt; Patty Dost; Ben Hung  
**Subject:** RE: Siltronic - Status of WS-47 Installation

Dana –

This email is in response to the 4/10 email from MFA concerning the installation of the replacement deep monitoring well at Siltronic.

MFA proposes to install a screen from 152 to 162 feet bgs. That would bring the sand pack 2-3 feet above the top of the screen at 149 or 150 feet bgs. We would like to see the screen and filter pack seal below the reported 1" silt layer at 150 feet (preferably 152 feet) since there does appear to be a decrease in odor and sheen below 150 feet. This is assuming MFA has had 100% core recovery. If they do not have 100% recovery, it is possible that the aquitard layer was missed.

It seems that drilling just a few more feet to ensure they are below the aquitard (if present) would be more protective so that the seal extends completely through the zone of the aquitard. With the screen at 155 to 165 ft bgs, the filter pack sand extending from the base of the screen up to 152 feet bgs and the filter pack seal (organo-clay grout) starting at 152

feet and extending to the ground surface, the well screen and filter pack sand should be below the silt layers. Otherwise there is a risk of the filter pack sand penetrating the silt layers again.

**John J. Renda, RG**

**ANCHOR QEA, LLC**

[jrenda@anchorqea.com](mailto:jrenda@anchorqea.com)

6650 SW Redwood Lane, Suite 333

Portland, OR 97224

Main 503.670.1108 x171

Direct 503.924.6171

Fax 503.670.1128

**ANCHOR QEA, LLC**

[www.anchorqea.com](http://www.anchorqea.com)

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---

**From:** James Peale [<mailto:jpeale@maulfoster.com>]

**Sent:** Friday, April 10, 2015 4:18 PM

**To:** Dana Bayuk; [Larsen.henning@deq.state.or.us](mailto:Larsen.henning@deq.state.or.us)

**Cc:** Burr, Myron; Earle, William G. ([WEARLE@davisrothwell.com](mailto:WEARLE@davisrothwell.com)); Chris Reive ([Chris.Reive@jordanramis.com](mailto:Chris.Reive@jordanramis.com)); Gaekwad, Ilene M.; Kerry Gallagher; John Renda; John Edwards; Kelly Titkemeier

**Subject:** Siltronic - Status of WS-47 Installation

Dana –

The following summarizes the status of well installation activities at Siltronic. In short, the silt layer representative of an aquitard separating the lower alluvium and deep lower alluvium has not been identified to a depth of 163 ft bgs. We recommend installing the screen at the current TD (with tailpipe, the screen interval will be 152-162 ft bgs).

Per my voice mail of 4/9/15, the drilling crew has been on standby since COB 4/9 and will be until COB Monday 4/13. We require DEQ's review and direction regarding next steps for WS47 before COB 4/13 so that we can resume drilling without accruing standby charges past 4/13.

Per email correspondence dated 10/9/14 and 2/4/15 (both MFA to DEQ), mail dated 9/18/14 (DEQ to Siltronic), and a phone call 1/23/15, we understood that the objective of the replacement well is to provide chemistry and groundwater data from the deep lower alluvium (DLA) below the deep aquitard, replacing former well screens for WS-11-161 and WS-14-161 (which are shown as screened across the deep aquitard in the attached Figure 2-3c annotated). Per the 9/18/14 correspondence, the replacement well is to "drilled to a depth that ensures that the top of the filter pack is below the bottom of the deep aquitard.

Per the 10/9/14 email to DEQ, MFA identified further information regarding the screen interval:

#### Screen Interval

Based on DEQ direction, we understand that the top of the screened interval should be below the aquitard or lower permeability layer identified in borings 11 & 14 and shown on the annotated figure 2-3c attached. The screen interval will be 10 ft. The presence, depth, and thickness of this layer will need to be determined during drilling. Based on previous borings, we anticipate the depth of this layer to occur between 143 and 152 ft

BGS, with a thickness of at least 2 ft. Based on the observations made during completion of these borings, we anticipate that the layer could consist of:

- . SILT with SAND (ML); dark gray; 70% fines, low to medium plasticity; 30% sand, fine to medium, sand in pockets; micaceous; organic debris; wet.
- . SILT (ML); gray; 100% fines, medium to high plasticity; trace sand; moist.

The same email recommended setting an 8" conductor casing and seal from the surface to the aquitard/low permeability layer anticipated to be present at 143-152 ft bgs.

Based on the observations made so far, an aquitard or low permeability layer meeting these criteria has not been identified in the WS-47 boring, from well above to well below (163 ft bgs) the expected interval. It does not appear that the lower alluvium and deep lower alluvium are separate or distinct units in this location. MGP impacts were observed throughout the interval described below (and to total depth).

Absent this silt interval, we have no basis for setting a conductor casing. In order to be consistent with the goal of installing a screen in the deep lower alluvium (defined here as a portion of the former WS-11-161/14-161 screen intervals (ie., 145-160 ft bgs), we recommend installing the screen at the current TD (with tailpipe, the screen interval will be 152-162 ft bgs).

I have included a draft (subject to revisions) summary of observations in the boring as follows (starting at 108 ft bgs for brevity):

- 108-115 ft: INTERBEDDED SILT AND SILTY SAND (SM/ML). @ 113-115 ft: mild hydrocarbon-like odor.
- 115-116.7 ft: SANDY SILT (ML). Mild hydrocarbon-like odor; trace blue sheen on the outside of the soil core.
- 116.7-117.3 ft: SILTY SAND (SM). Mild hydrocarbon-like odor.
- 117.3-118.2 ft: SANDY SILT (ML). Mild hydrocarbon-like odor.
- 118.2-121 ft: SILTY SAND (SM).
- 121-125 ft: SILT (ML).
- 125-126.5 ft: SANDY SILT (ML). Mild hydrocarbon-like odor; trace blue sheen on the outside of the soil core.
- 126.5-128.5 ft: SILTY SAND (SM). Mild hydrocarbon-like odor.
- 128.5-135 ft: SAND WITH SILT (SP-SM). Mild hydrocarbon-like odor.
- 135-144 ft: SAND WITH SILT (SP-SM). Hydrocarbon-like odor; @ 138.5-141.5 ft: strong hydrocarbon-like odor, rainbow sheen, and moderate dark brown staining. Dark brown staining observed on the inside of the core bags and on gloves after handling the soil from this interval. @ 141.5-143 ft: slight rainbow sheen when wet, decreasing with depth. @ 138.5 ft: 1.5" thick SILT (ML) lens.
- 144-145 ft: NO RECOVERY.
- 145-147 ft: SAND WITH SILT (SP-SM). Hydrocarbon-like odor; trace blue sheen when wet.
- 147-150 ft: SILTY SAND (SM). 85% sand; 15% fines. Strong hydrocarbon-like odor. @ 148.5-149.5 ft: some blue-silver sheen, light to moderate dark brown staining. Some dark brown staining is observed on the inside of the core bags and on gloves after handling the soil from this interval.
- @ 150 ft: 1" thick SILT (ML) lens.
- 150-153 ft: SAND WITH SILT (SP-SM). Hydrocarbon-like odor.
- 153-163 ft: SAND WITH SILT (SP-SM). @ 153-161 ft: hydrocarbon-like odor, decreasing with depth. @162 ft: 2" SILT (ML) lens.

We appreciate DEQ's timely review and response to this email.

Thanks

jp

d. 503 501 5218 | p. 971 544 2139 | c. 503 449-9576 | f. 971 544 2140 |  
2001 NW 19th Avenue, Suite 200, Portland, OR 97209

[LinkedIn](#)

<http://www.maulfoster.com>



# ATTACHMENT B

GRAIN SIZE ANALYSIS





# Specialty Analytical

11711 SE Capps Road, Ste B  
Clackamas, Oregon 97015  
TEL: 503-607-1331 FAX: 503-607-1336  
Website: [www.specialtyanalytical.com](http://www.specialtyanalytical.com)

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May 05, 2015

James Peale  
Maul Foster & Alongi  
400 E. Mill Plain Blvd.  
Suite 400  
Vancouver, WA 98660

TEL: (360) 694-2691

FAX: (360) 906-1958

RE: Siltronic-WS47 Grain Size / 8128.01.08/08

Dear James Peale:

Order No.: 1504172

Specialty Analytical received 14 sample(s) on 4/20/2015 for the analyses presented in the following report.

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications, except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Marty French". The signature is stylized and cursive.

Marty French  
Lab Director

# Specialty Analytical

Date Reported: 05-May-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic-WS47 Grain Size / 8128.01.08/08

**Lab Order:** 1504172

**Lab ID:** 1504172-001 **Collection Date:** 4/8/2015 4:05:00 PM  
**Client Sample ID:** WS47-SO-118.2-121 **Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>HOLD PER CLIENT REQUEST</b>		<b>PER CLIENT</b>				Analyst: <b>knb</b>
Hold	Hold	0			1	5/4/2015 11:09:27 AM

**Lab ID:** 1504172-002 **Collection Date:** 4/8/2015 4:10:00 PM  
**Client Sample ID:** WS47-SO-121-125 **Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>HOLD PER CLIENT REQUEST</b>		<b>PER CLIENT</b>				Analyst: <b>knb</b>
Hold	Hold	0			1	5/4/2015 11:09:27 AM

**Lab ID:** 1504172-003 **Collection Date:** 4/9/2015 9:10:00 AM  
**Client Sample ID:** WS47-SO-125-126.5 **Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>HOLD PER CLIENT REQUEST</b>		<b>PER CLIENT</b>				Analyst: <b>knb</b>
Hold	Hold	0			1	5/4/2015 11:09:27 AM

**Lab ID:** 1504172-004 **Collection Date:** 4/9/2015 9:15:00 AM  
**Client Sample ID:** WS47-SO-126.5-128.5 **Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>HOLD PER CLIENT REQUEST</b>		<b>PER CLIENT</b>				Analyst: <b>knb</b>
Hold	Hold	0			1	5/4/2015 11:09:27 AM

**Lab ID:** 1504172-005 **Collection Date:** 4/9/2015 9:20:00 AM  
**Client Sample ID:** WS47-SO-128.5-135 **Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>HOLD PER CLIENT REQUEST</b>		<b>PER CLIENT</b>				Analyst: <b>knb</b>
Hold	Hold	0			1	5/4/2015 11:09:27 AM

# Specialty Analytical

Date Reported: 05-May-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic-WS47 Grain Size / 8128.01.08/08

**Lab Order:** 1504172

**Lab ID:** 1504172-006 **Collection Date:** 4/9/2015 10:15:00 AM  
**Client Sample ID:** WS47-SO-135-144 **Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>HOLD PER CLIENT REQUEST</b>		<b>PER CLIENT</b>				Analyst: <b>knb</b>
Hold	Hold	0			1	5/4/2015 11:09:27 AM

**Lab ID:** 1504172-007 **Collection Date:** 4/9/2015 11:25:00 AM  
**Client Sample ID:** WS47-SO-145-147 **Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>GRAIN SIZE</b>		<b>D422</b>				Analyst: <b>BW</b>
Particle Size	COMPLETE	0			1	4/21/2015 12:11:55 PM
<b>MOISTURE CONTENT</b>		<b>D2216</b>				Analyst: <b>EFH</b>
Moisture Content	13.8	0.100		wt%	1	4/24/2015 8:30:27 AM

**Lab ID:** 1504172-008 **Collection Date:** 4/9/2015 11:30:00 AM  
**Client Sample ID:** WS47-SO-147-150 **Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>GRAIN SIZE</b>		<b>D422</b>				Analyst: <b>BW</b>
Particle Size	COMPLETE	0			1	4/21/2015 12:13:55 PM
<b>MOISTURE CONTENT</b>		<b>D2216</b>				Analyst: <b>EFH</b>
Moisture Content	12.8	0.100		wt%	1	4/24/2015 8:40:27 AM

**Lab ID:** 1504172-009 **Collection Date:** 4/9/2015 11:35:00 AM  
**Client Sample ID:** WS47-SO-150 **Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>HOLD PER CLIENT REQUEST</b>		<b>PER CLIENT</b>				Analyst: <b>knb</b>
Hold	Hold	0			1	5/4/2015 11:09:27 AM

# Specialty Analytical

Date Reported: 05-May-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic-WS47 Grain Size / 8128.01.08/08

**Lab Order:** 1504172

**Lab ID:** 1504172-010 **Collection Date:** 4/9/2015 1:40:00 PM  
**Client Sample ID:** WS47-SO-150-153 **Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>GRAIN SIZE</b>		<b>D422</b>				Analyst: <b>BW</b>
Particle Size	COMPLETE	0			1	4/21/2015 12:15:55 PM
<b>MOISTURE CONTENT</b>		<b>D2216</b>				Analyst: <b>EFH</b>
Moisture Content	20.4	0.100		wt%	1	4/24/2015 8:45:27 AM

**Lab ID:** 1504172-011 **Collection Date:** 4/9/2015 3:30:00 PM  
**Client Sample ID:** WS47-SO-153-163 **Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>HOLD PER CLIENT REQUEST</b>		<b>PER CLIENT</b>				Analyst: <b>knb</b>
Hold	Hold	0			1	5/4/2015 11:09:27 AM

**Lab ID:** 1504172-012 **Collection Date:** 4/9/2015 3:35:00 PM  
**Client Sample ID:** WS47-SO-162 **Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>HOLD PER CLIENT REQUEST</b>		<b>PER CLIENT</b>				Analyst: <b>knb</b>
Hold	Hold	0			1	5/4/2015 11:09:27 AM

**Lab ID:** 1504172-013 **Collection Date:** 4/13/2015 4:15:00 PM  
**Client Sample ID:** WS47-SO-169 **Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>GRAIN SIZE</b>		<b>D422</b>				Analyst: <b>BW</b>
Particle Size	COMPLETE	0			1	4/21/2015 12:17:55 PM
<b>MOISTURE CONTENT</b>		<b>D2216</b>				Analyst: <b>EFH</b>
Moisture Content	29.6	0.100		wt%	1	4/24/2015 8:50:27 AM

# Specialty Analytical

Date Reported: 05-May-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic-WS47 Grain Size / 8128.01.08/08

**Lab Order:** 1504172

**Lab ID:** 1504172-014  
**Client Sample ID:** WS47-SO-163-183

**Collection Date:** 4/13/2015 4:10:00 PM  
**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>GRAIN SIZE</b>		<b>D422</b>				Analyst: <b>BW</b>
Particle Size	COMPLETE	0			1	4/21/2015 12:19:55 PM
<b>MOISTURE CONTENT</b>		<b>D2216</b>				Analyst: <b>EFH</b>
Moisture Content	16.5	0.100		wt%	1	4/24/2015 8:55:27 AM

# QC SUMMARY REPORT

WO#: 1504172

05-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi

**Project:** Siltronic-WS47 Grain Size / 8128.01.08/08

**TestCode:** MOIST

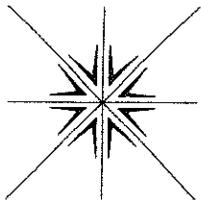
Sample ID: <b>1504172-007ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>MOIST</b>	Units: <b>wt%</b>	Prep Date:	RunNo: <b>19843</b>						
Client ID: <b>WS47-SO-145-147</b>	Batch ID: <b>R19843</b>	TestNo: <b>D2216</b>		Analysis Date: <b>4/24/2015</b>	SeqNo: <b>265540</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Moisture Content	11.5	0.100						13.78	18.4	20	

**Qualifiers:** B Analyte detected in the associated Method Blank  
O RSD is greater than RSDlimit

H Holding times for preparation or analysis exceeded  
R RPD outside accepted recovery limits

ND Not Detected at the Reporting Limit  
S Spike Recovery outside accepted reco

# CHAIN OF CUSTODY RECORD



## Specialty Analytical

11711 SE Capps Road  
Clackamas, OR 97015  
Phone: 503-607-1331  
Fax: 503-607-1336

Contact Person/Project Manager James Peale  
Company Maul Foster & Alongi, Inc  
Address 2001 NW 19th Avenue, Suite 200  
Portland, OR 97209  
Phone 971-544-2139 Fax 971-544-2140  
Project No. 8123.01.08/08 Project Name Siltronic-WS47 Grain Size  
Project Site Location OR  WA \_\_\_\_\_ Other \_\_\_\_\_  
Invoice To MFA P.O. No. \_\_\_\_\_

Collected By: \_\_\_\_\_  
Signature Kelly R. Titkemeier  
Printed Kelly R. Titkemeier

Signature \_\_\_\_\_  
Printed \_\_\_\_\_

Turn Around Time  
 Normal 5-7 Business Days  
 Rush \_\_\_\_\_  
Specify \_\_\_\_\_

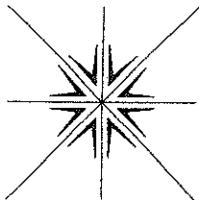
**Rush Analyses Must Be Scheduled With The Lab In Advance**

No. of Containers	Analyses										For Laboratory Use			
	GRAIN SIZE	PERCENT MOISTURE										Lab Job No.	Shipped Via	Air Bill No.
												<u>1504172</u>	<u>Specialty</u>	
													<u>AK Amb</u> °C	
												Specialty Analytical Containers? Y/N		
												Specialty Analytical Trip Blanks? Y/N		

Date	Time	Sample I.D.	Matrix	No. of Containers	GRAIN SIZE	PERCENT MOISTURE	Comments	Lab I.D.
<u>4/3/15</u>	<u>1605</u>	<u>WS47-SO-118.2-121</u>	<u>SOIL</u>	<u>1</u>			<u>Call before disposal.</u>	
<u>↓</u>	<u>1610</u>	<u>WS47-SO-121-125</u>						
<u>4/4/15</u>	<u>0910</u>	<u>WS47-SO-125-126.5</u>						
	<u>0915</u>	<u>WS47-SO-126.5-128.5</u>						
	<u>0920</u>	<u>WS47-SO-128.5-135</u>						
	<u>1015</u>	<u>WS47-SO-135-144</u>						
	<u>1125</u>	<u>WS47-SO-145-147</u>			<u>XX</u>			
	<u>1130</u>	<u>WS47-SO-147-150</u>			<u>XX</u>			
	<u>1135</u>	<u>WS47-SO-150</u>						
	<u>1340</u>	<u>WS47-SO-150-153</u>			<u>XX</u>			
	<u>1530</u>	<u>WS47-SO-153-163</u>						
<u>↓</u>	<u>1535</u>	<u>WS47-SO-162</u>						

Relinquished By: <u>Kelly R. Titkemeier</u>	Date: <u>4/20/15</u>	Time: <u>1100</u>	Received By: <u>[Signature]</u>	Relinquished By: <u>[Signature]</u>	Date: <u>4/20/15</u>	Time: <u>1:00 PM</u>
Company: <u>MFA</u>			Company: <u>Specialty</u>	Company: <u>Specialty</u>		
Unless Reclaimed, Samples Will Be Disposed of 60 Days After Receipt. Samples held beyond 60 days subject to storage fee(s)				Received For Lab By: <u>Nikki Bupper</u>	Date: <u>4/20/15</u>	Time: <u>1300</u>

# CHAIN OF CUSTODY RECORD



## Specialty Analytical

11711 SE Capps Road  
 Clackamas, OR 97015  
 Phone: 503-607-1331  
 Fax: 503-607-1336

Contact Person/Project Manager James Peale  
 Company Maul Foster & Alonzi, Inc.  
 Address 2001 NW 19<sup>th</sup> Avenue, Suite 200  
Portland, OR 97209  
 Phone 971-544-2139 Fax 971-544-2140  
 Project No. 8123.01.08/08 Project Name Siltronic-WS47 Grain Size  
 Project Site Location OR  WA \_\_\_\_\_ Other \_\_\_\_\_  
 Invoice To MFA P.O. No. \_\_\_\_\_

Collected By: Kelly R. Tkemeier  
 Signature Kelly R. Tkemeier  
 Printed Kelly R. Tkemeier  
 Signature \_\_\_\_\_  
 Printed \_\_\_\_\_

Turn Around Time  
 Normal 5-7 Business Days  
 Rush \_\_\_\_\_  
 Specify \_\_\_\_\_

Rush Analyses Must Be Scheduled With The Lab In Advance

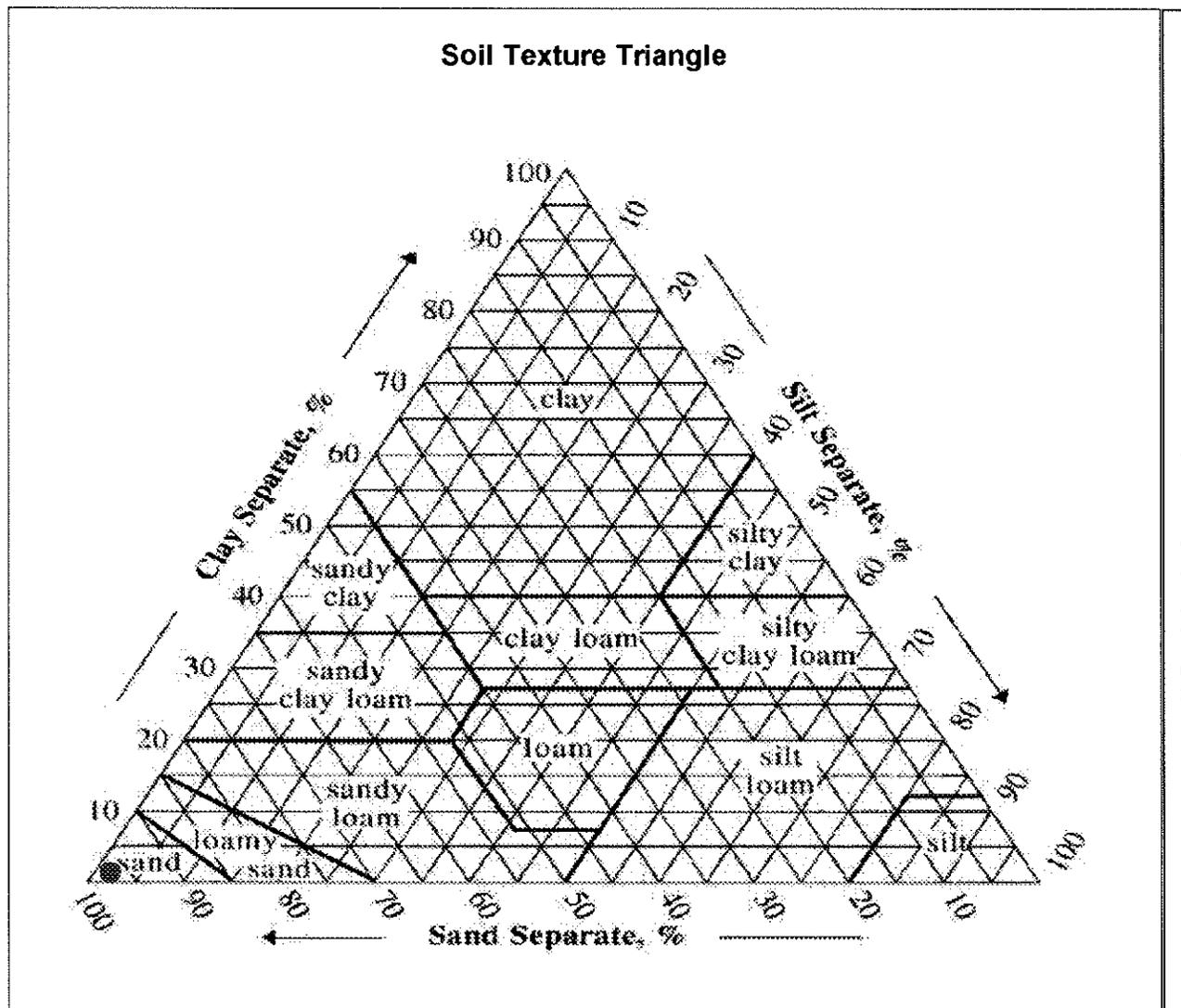
No. of Containers	Analyses										For Laboratory Use		
	GRAIN SIZE	PERCENT MOISTURE										Lab Job No. <u>1504172</u>	Shipped Via <u>Specialty</u>
												Air Bill No. _____	Temperature On Receipt <u>21</u> °C
												Specialty Analytical Containers? Y / N	Specialty Analytical Trip Blanks? Y / N
Date	Time	Sample I.D.	Matrix									Comments	Lab I.D.
<u>4/13/15</u>	<u>1615</u>	<u>WS47-SO-169</u>	<u>SOIL</u>	<u>1</u>	<u>XX</u>	<u>XX</u>							
<u>✓</u>	<u>1610</u>	<u>WS47-SO-163-183</u>	<u>SOIL</u>	<u>1</u>	<u>XX</u>	<u>XX</u>							

Relinquished By: <u>Kelly R. Tkemeier</u>	Date: <u>4/13/15</u>	Time: <u>11:00</u>	Received By: <u>[Signature]</u>	Relinquished By: <u>[Signature]</u>	Date: <u>4/20/15</u>	Time: <u>1:00 PM</u>
Company: <u>MFA</u>			Company: <u>Specialty</u>	Company: <u>Specialty</u>		
Unless Reclaimed, Samples Will Be Disposed of 60 Days After Receipt. Samples held beyond 60 days subject to storage fee(s)				Received For Lab By: <u>Nikki Bopper</u>	Date: <u>4/20/15</u>	Time: <u>1300</u>

<b>User Pedon ID ==&gt;</b>		<b>USDA Texture</b>				
<b>Sample Number =&gt;</b> 1504172-007A		<b>SAND</b>				
<b>Soil Name ==&gt;</b> 1504172-007A		<b>Sand</b>	<b>Clay</b>	<b>Silt</b>		
Hydrometer:	% Sand	97%	% Clay	1%	% Silt	2%
Adjusted:	% Sand	97%	% Clay	1%	% Silt	2%

Sieved Sand Sizes	
% Very Coarse	2%
% Coarse	24%
% Medium	52%
% Fine	14%
% Very Fine	5%
<b>Total</b>	<b>97%</b>

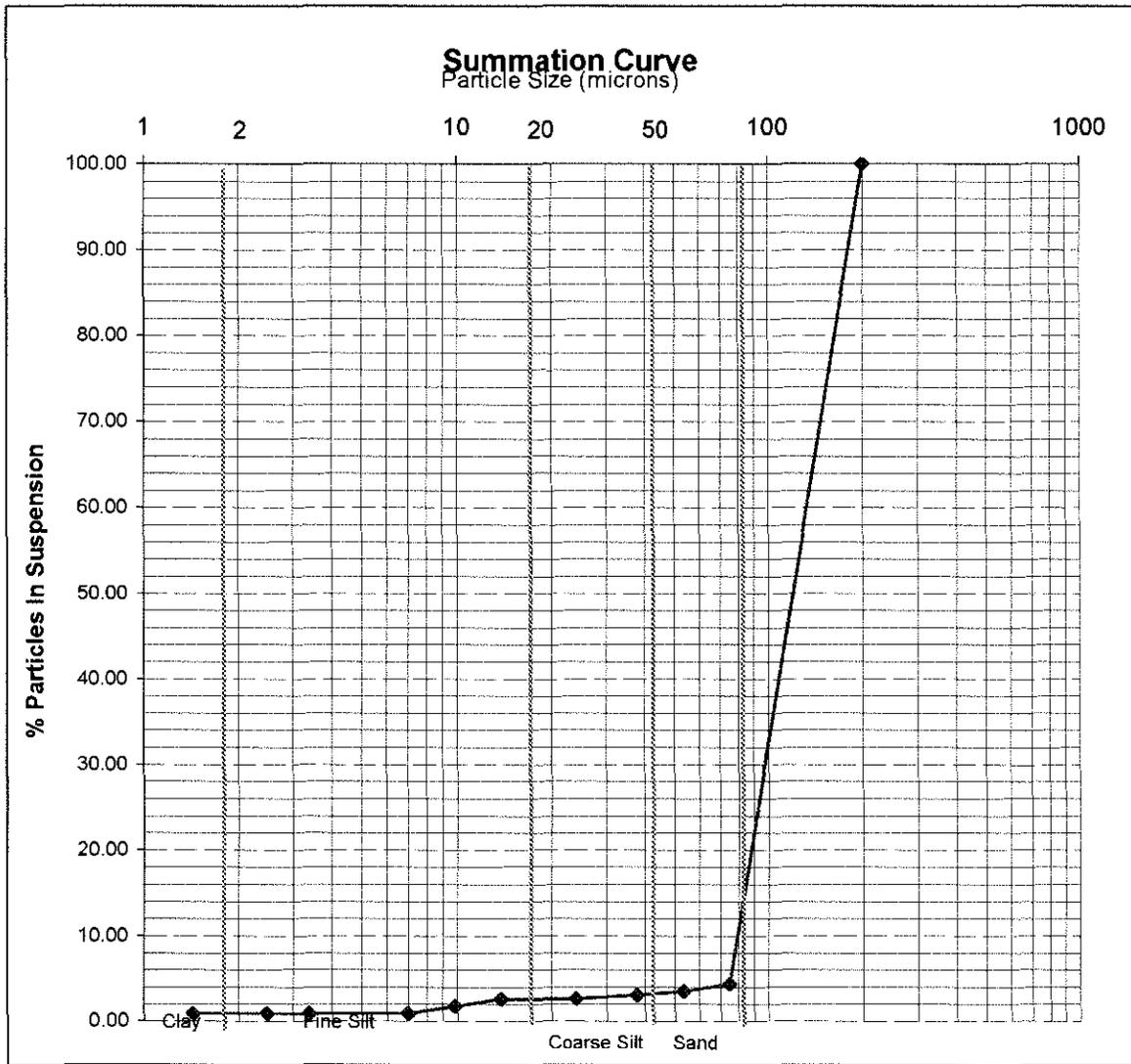
<b>x=53</b>	<b>estimated 270 sieve sand %</b>
53	97%
<b>x=47</b>	<b>estimated 300 sieve sand %</b>
47	97%



Time in minutes	x	y
0.5	75.21819888	4.34
1	53.48731865	3.47
480	2.48197958	0.87
1440	1.432971578	0.87

Log Slope of .5 to 1 minute reading	Log(y) Intercept	x=50	Sand %
0.004458653	0.301625823	3.35	97%

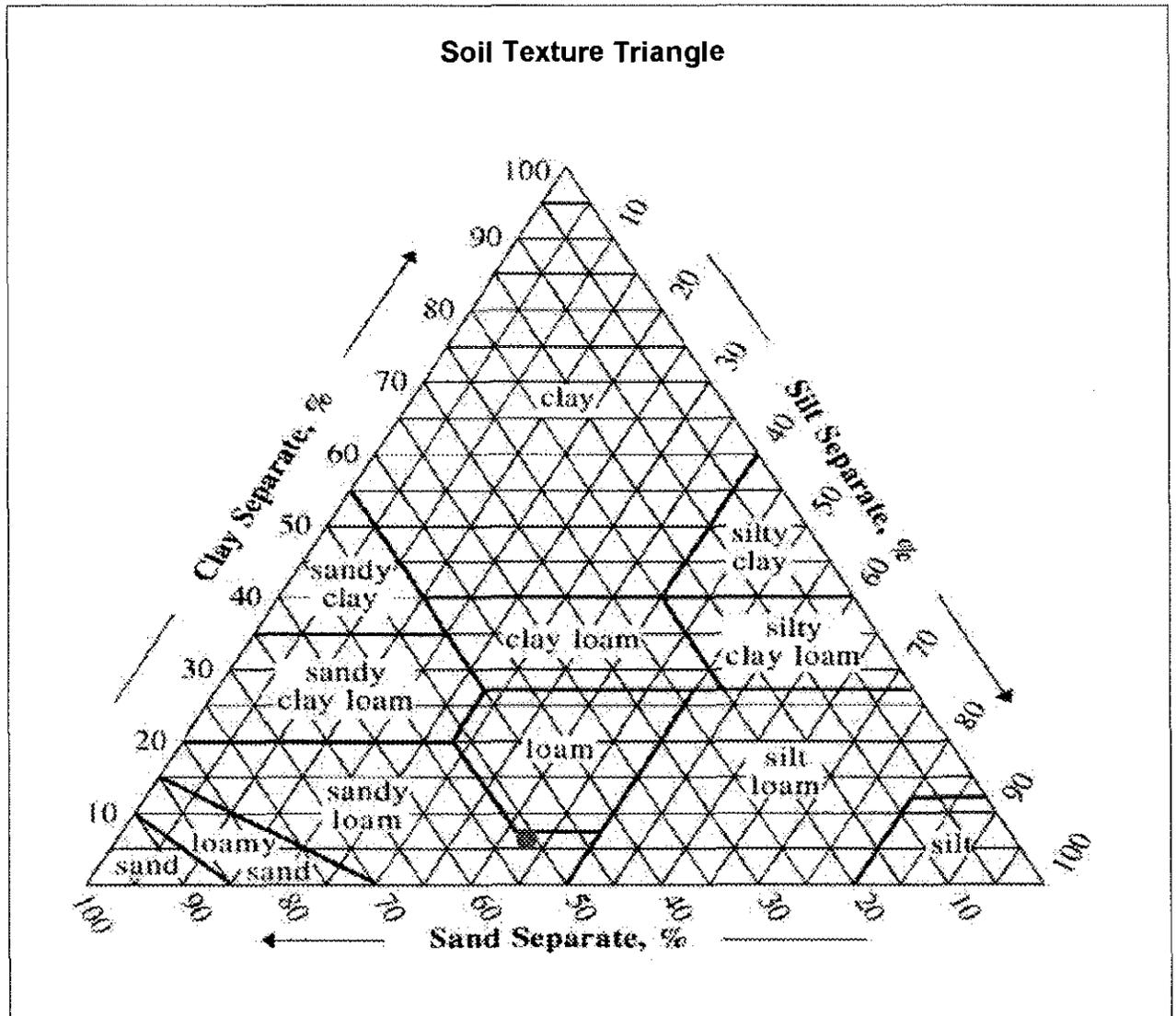
Log Slope of 480 to 1440 minute reading	Log(y) Intercept	x=2	Clay %
0	-0.061904634	0.87	1%



User Pedon ID ==>		USDA Texture					
Sample Number => 1504172-008A		SAND					
Soil Name ==>1504172-008A		Sand	Clay	Silt			
	Hydrometer:	% Sand	90%	% Clay	6%	% Silt	4%
	Adjusted:	% Sand	51%	% Clay	6%	% Silt	43%

Sieved Sand Sizes	
% Very Coarse	1%
% Coarse	12%
% Medium	25%
% Fine	9%
% Very Fine	4%
<b>Total</b>	<b>51%</b>

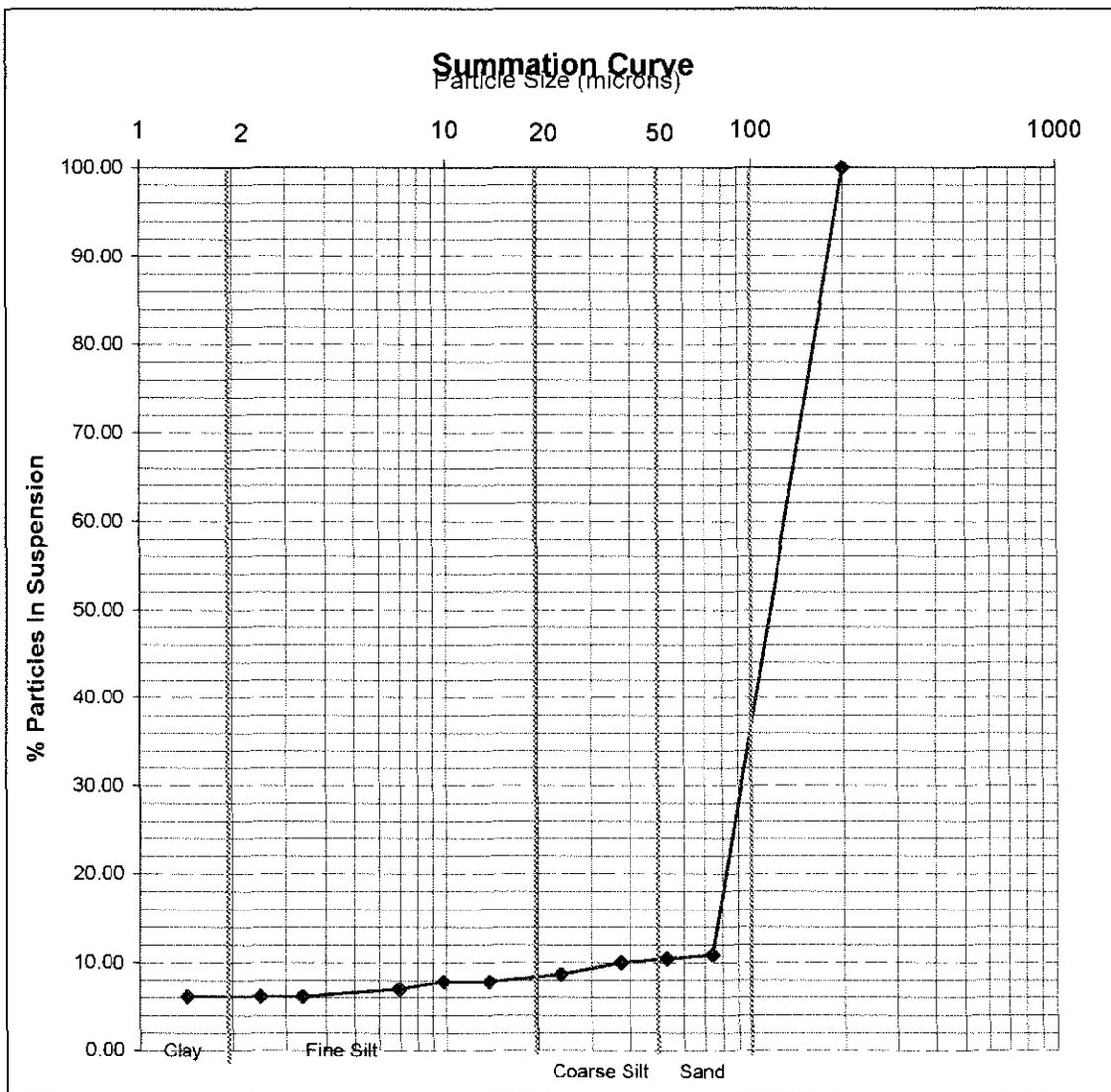
x=53	estimated 270 sieve sand %
100%	50%
x=47	estimated 300 sieve sand %
100%	50%



Time in minutes	x	y
0.5	74.57723403	10.84
1	52.88557635	10.41
480	2.48197958	6.07
1440	1.432971578	6.07

Log Slope of .5 to 1 minute reading	log(y) Intercep	x=50	Sand %
0.000817308	0.974052604	10.35	90%

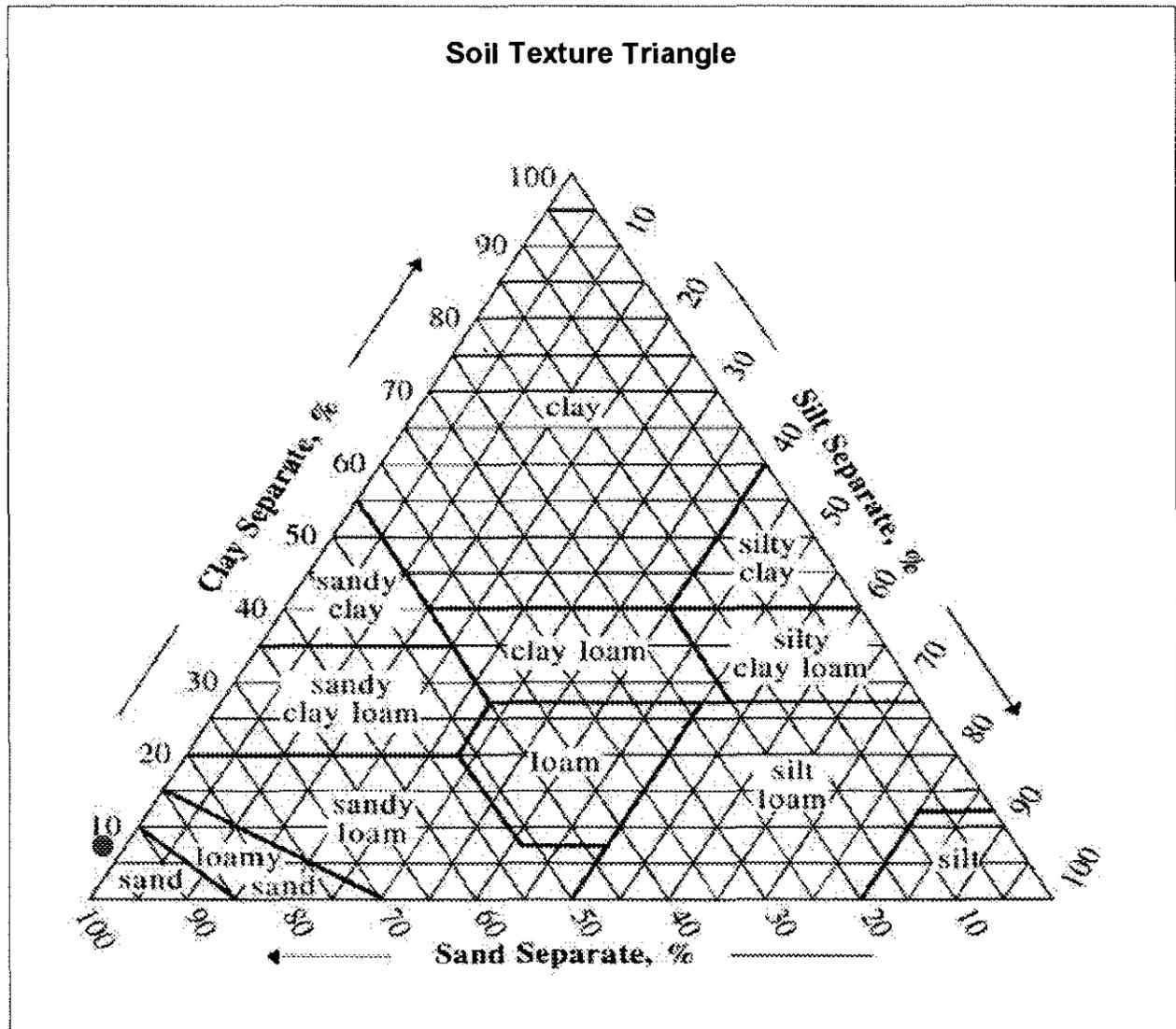
Log Slope of 480 to 1440 minute reading	log(y) Intercep	x=2	Clay %
0	0.783193408	6.07	6%



User Pedon ID ==>		USDA Texture		
Sample Number => 1504172-0010A		SAND		
Soil Name ==>1504172-0010A	Sand	Clay	Silt	
Hydrometer:	% Sand 90%	% Clay 7%	% Silt	3%
Adjusted:	% Sand 95%	% Clay 7%	% Silt	-2%

Sieved Sand Sizes	
% Very Coarse	1%
% Coarse	25%
% Medium	51%
% Fine	13%
% Very Fine	5%
Total	95%

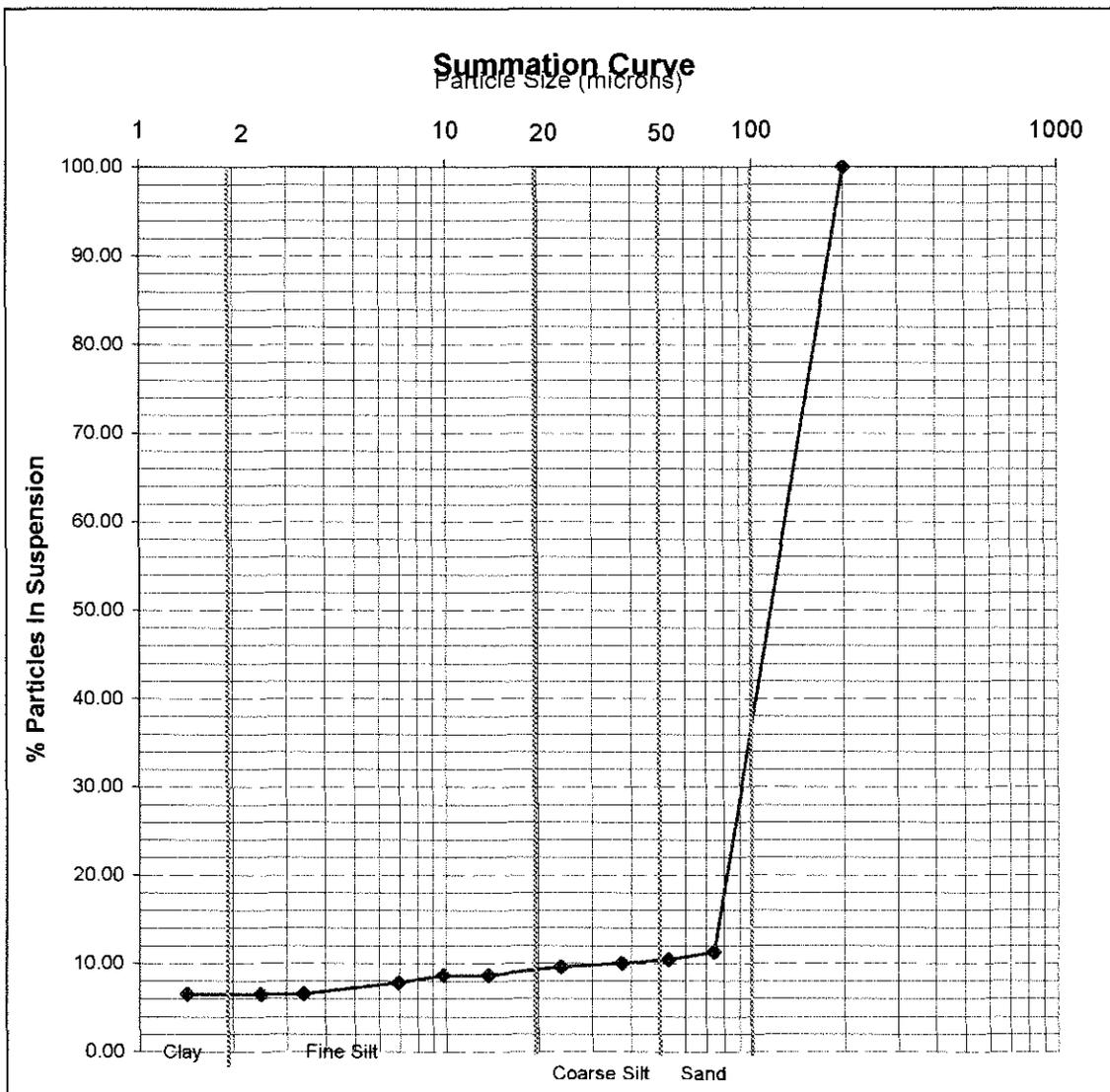
x=53	estimated 270 sieve sand %
100	90%
x=47	estimated 300 sieve sand %
100	95%



Time in minutes	x	y
0.5	74.36235136	11.27
1	52.88557635	10.41
480	2.475254447	6.50
1440	1.429088821	6.50

Log Slope of .5 to 1 minute reading	log(y) Intercep	x=50	Sand %
0.001616591	0.831676518	10.29	90%

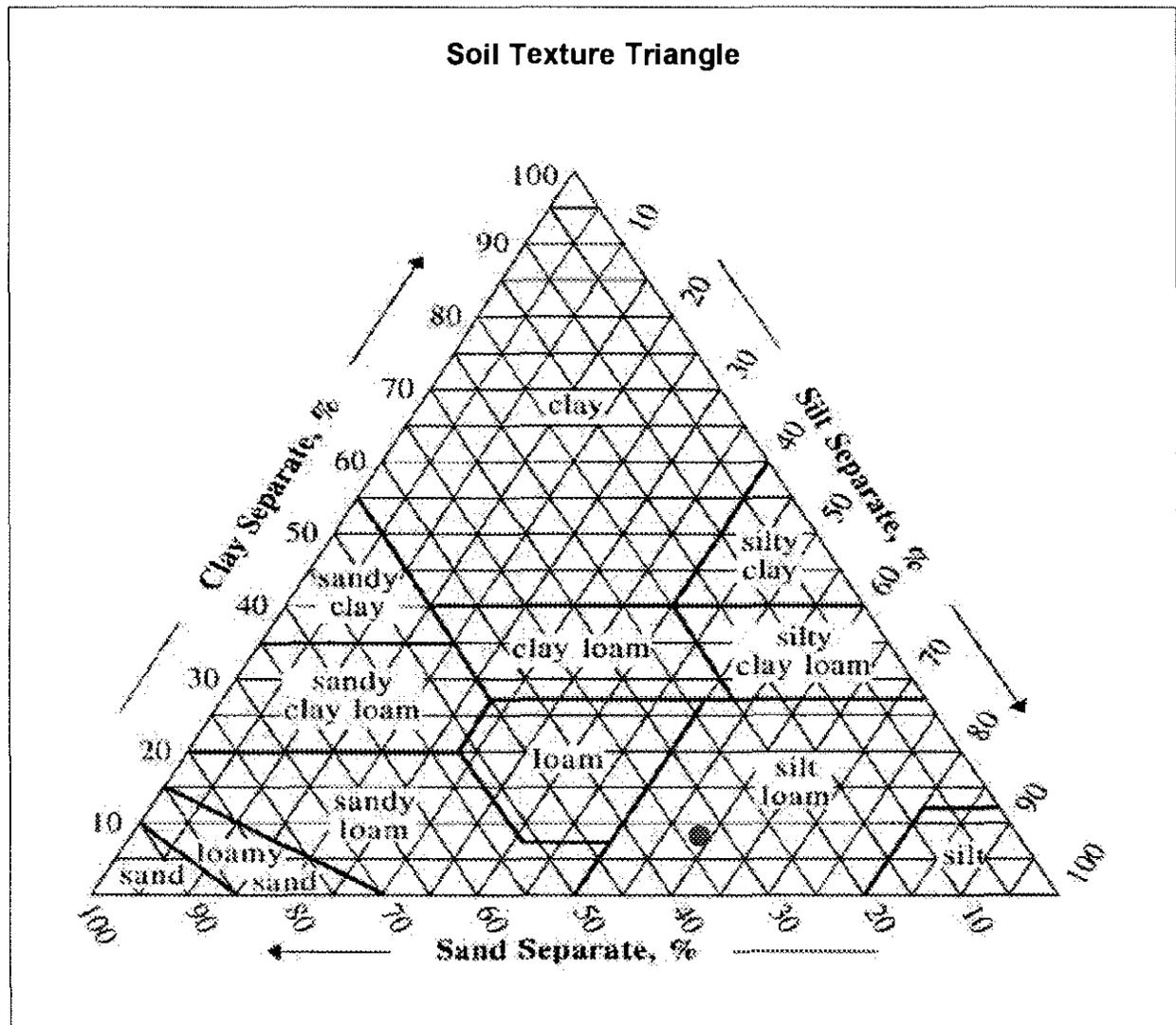
Log Slope of 480 to 1440 minute reading	log(y) Intercep	x=2	Clay %
0	0.61315663	6.50	7%



User Pedon ID ==>		USDA Texture					
Sample Number => 1504172-0013A		SAND					
Soil Name ==>1504172-0013A		Sand	Clay	Silt			
	Hydromete	% Sand	74%	% Clay	8%	% Silt	18%
	Adjusted:	% Sand	33%	% Clay	8%	% Silt	59%

Sieved Sand Sizes	
% Very Coarse	4%
% Coarse	2%
% Medium	7%
% Fine	10%
% Very Fine	10%
<b>Total</b>	<b>33%</b>

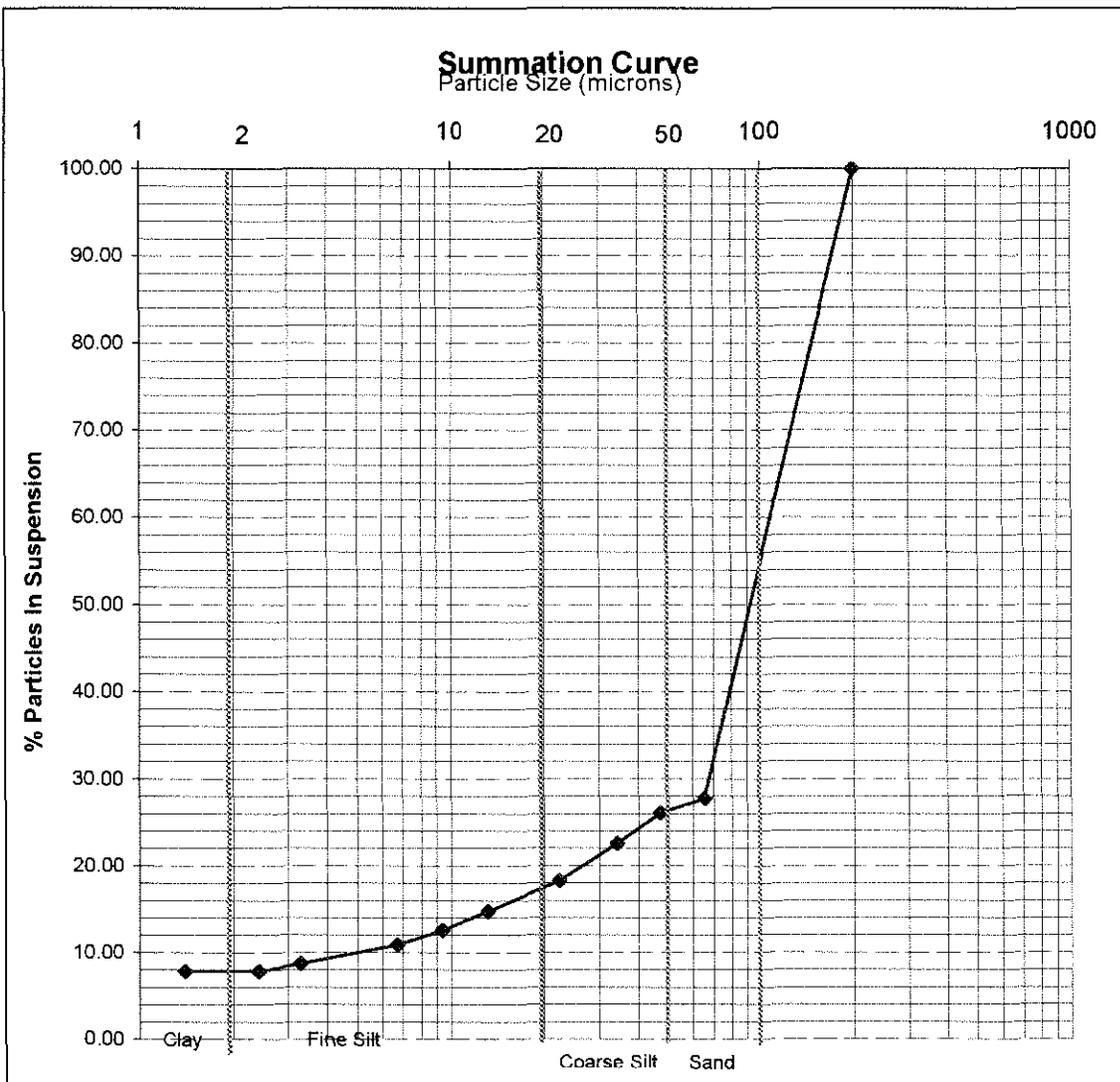
x=53	estimated 270 sieve sand %
1.42	56%
x=47	estimated 300 sieve sand %
1.42	56%



Time in minutes	x	y
0.5	65.67790299	27.75
1	47.12539169	26.01
480	2.422398157	7.80
1440	1.398572228	7.80

Log Slope of .5 to 1 minute reading	log(y) Intercep	x=50	Sand %
0.001510778	1.344020622	26.28	74%

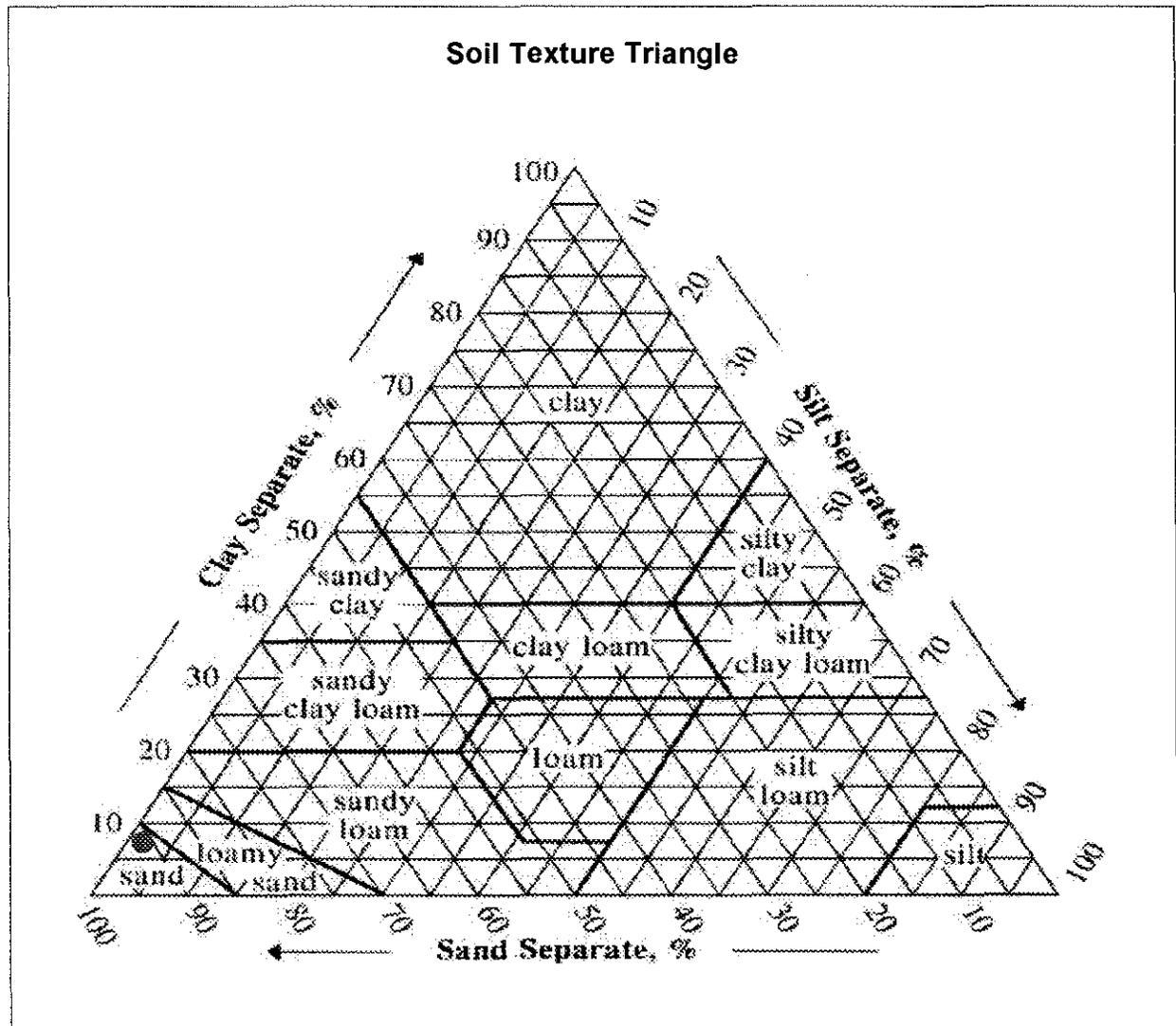
Log Slope of 480 to 1440 minute reading	log(y) Intercep	x=2	Clay %
0	0.892337876	7.80	8%



User Pedon ID ==>		USDA Texture				
Sample Number ==>		SAND				
Soil Name ==>1504172-014A		Sand		Clay	Silt	
Hydromete	% Sand	85%	% Clay	7%	% Silt	8%
Adjusted:	% Sand	91%	% Clay	7%	% Silt	2%

Sieved Sand Sizes	
% Very Coarse	0%
% Coarse	15%
% Medium	51%
% Fine	19%
% Very Fine	5%
<b>Total</b>	<b>91%</b>

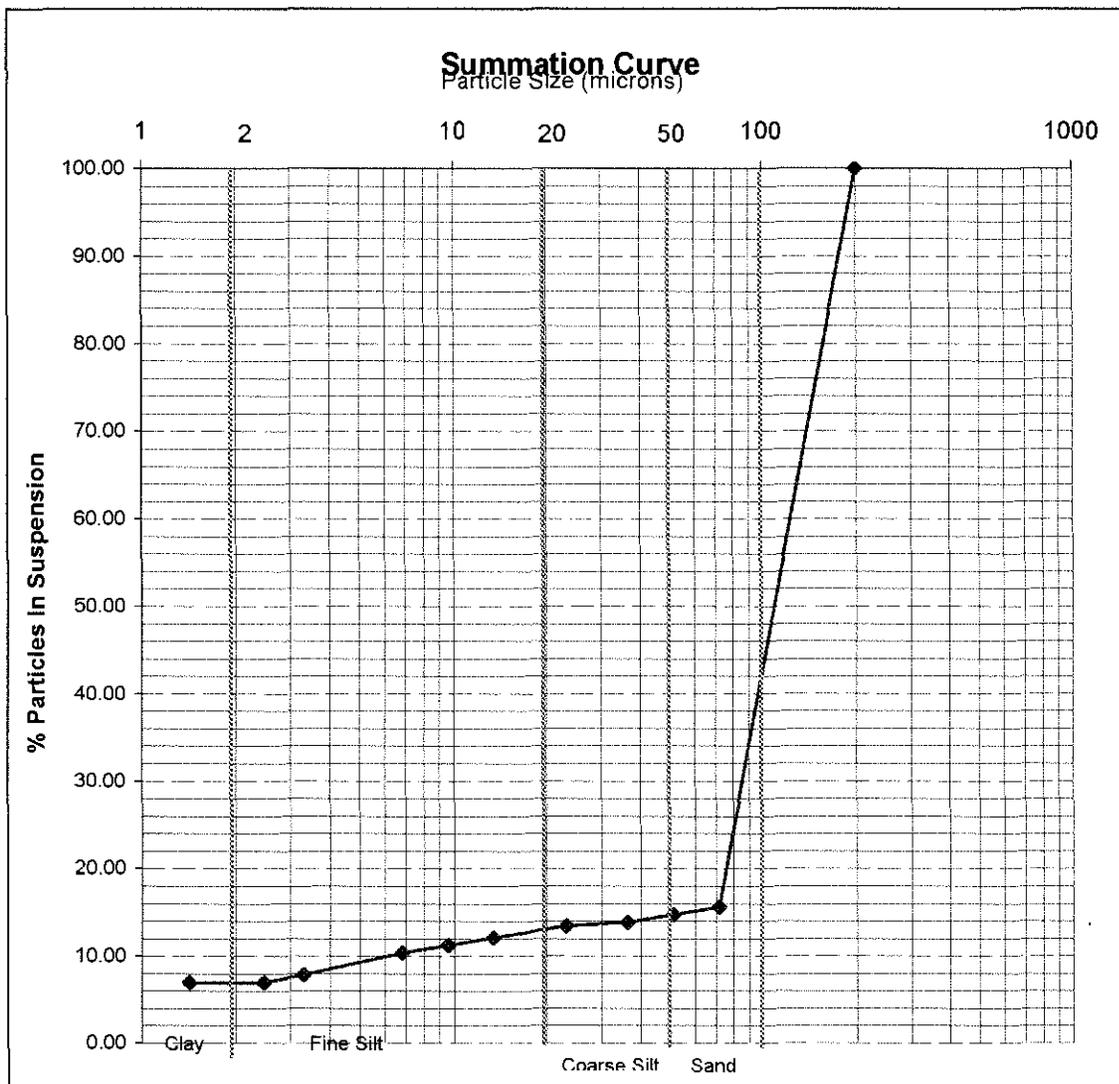
<b>x=53</b>	<b>estimated 270 sieve sand %</b>
15%	85%
<b>x=47</b>	<b>estimated 300 sieve sand %</b>
15%	85%



Time in minutes	x	y
0.5	72.17834815	15.61
1	51.35037981	14.74
480	2.468510992	6.94
1440	1.425195486	6.94

Log Slope of .5 to 1 minute reading	log(y) Intercep	x=50	Sand %
0.001191839	1.307342805	14.69	85%

Log Slope of 480 to 1440 minute reading	log(y) Intercep	x=2	Clay %
0	0.841186363	6.94	7%



# ATTACHMENT C

MONITORING WELL COMPLETION LOG



# Maul Foster & Alongi, Inc.

## Geologic Borehole Log/Well Construction

Project Number  
8128.01.08

Well Number  
WS47-183

Sheet  
1 of 9

Project Name	<b>Siltronic Corporation</b>	TOC Elevation (feet)	<b>32.37</b>
Project Location	<b>7200 Northwest Front Avenue, Portland, Oregon</b>	Surface Elevation (feet)	<b>32.6</b>
Start/End Date	<b>4/7/2015 to 4/16/2015</b>	Northing	<b>705154.4</b>
Driller/Equipment	<b>Cascade Drilling, L.P./Sonic</b>	Easting	<b>7624602.8</b>
Geologist/Engineer	<b>Kelly Titkemeier</b>	Hole Depth	<b>183.0-feet</b>
Sample Method	<b>Sonic</b>	Outer Hole Diam	<b>10-inch to 6-inch</b>

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Sample Data				Lithologic Column	Soil Description
				Collection Method	Number	Name (Type)	Blows/6"		
1			0%						0.0 to 10.0 feet: NO RECOVERY. Interval was removed using airknife and vacuum truck to check for underground utilities. Down-hole observations: SAND (SP); brown; some gravel from 0 to 3 feet.
2									
3									
4									
5									
6									
7									
8									
9									
10			100%	CB				10.0 to 29.0 feet: SAND (SW); very dark grayish brown; 100% sand, fine to coarse, loose; trace gravel, fine to coarse, subrounded to rounded; trace wood fragments; dry to damp.  @ 16.0 to 17.0 feet: Black staining; trace blue sheen produced when wet.  @ 18.0 feet: Thin wire, approximately 4 inches long.  @ 18.0 to 22.0 feet: Trace micaceous silt nodules.	
11									
12									
13						PID = 24 ppm			
14									
15									
16									
17						PID = 273 ppm			
18									
19									
20						PID = 47 ppm			

**NOTES:** 1. bgs = below ground surface. 2. CB = core barrel soil sampler. 3. ppm = parts per million. 4. PID = photoionization detector, soil head space reading in ppm. 5. PVC = polyvinyl chloride. 6. TOC = top of casing. 7. Depths are approximate and relative to feet bgs. 8. Horizontal Datum: NAD 83/91, Oregon State Plane Coordinate System, North Zone, International Feet, HARN. 9. Vertical Datum: NGVD 29/47. 10. Seal placed from 30 to 35 feet bgs and from 160 to 163 feet bgs using 3/8-inch bentonite chips, hydrated in place. 11. A magnet was held to soil from 90 to 135 feet bgs at approximately 1-foot intervals. No reaction was observed. 12. DNAPL = dense nonaqueous-phase liquid. 13. NR = not recorded.

Depth (feet, BGS)	Well Details	Sample Data					Blows/6"	Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method	Number	Name (Type)			
21									
22									
23			100%	CB				@ 22.0 to 29.0 feet: Fines increasing from 5% to 15% with depth. Decreasing coarse sand content with depth. Damp, becoming moist with depth.	
24									
25						PID = 24.7 ppm			
26									
27								@ 27.0 feet: Color change to very dark gray. @ 27.0 to 29.0 feet: Trace silt nodules.	
28						PID = 20 ppm			
29			100%	CB				29.0 to 29.5 feet: SAND WITH SILT (SW-SM); very dark gray; 15% fines; 85% sand, fine to coarse, loose; hydrocarbon-like odor; moist.	
30			70%	CB		PID = 173 ppm		29.5 to 40.0 feet: SANDY SILT (ML); very dark gray; 55-80% fines, low to medium plasticity; 20-45% sand, very fine to fine; trace mica, rootlet, and decayed wood fragments; moist. Lenses of SILTY SAND (SM); very dark gray; 30% fines; 70% sand; trace mica; moist to wet. Lenses vary in thickness up to 4 inches.	
31						PID = 18 ppm		@ 29.5 to 30.0 feet: Strong hydrocarbon-like odor; trace blue sheen when wet; some black staining. Large decayed wood fragment, approximately 7 inches by 1 inch; flexible.	
32								@ 30.0 to 31.0 feet: Hydrocarbon-like odor, decreasing with depth.	
33						PID = 17.7 ppm		@ 31.0 to 34.0 feet: Reddish-brown mottling. Medium to coarse sand-sized fragments of friable red material (brick?) observed in mottled areas.	
34								@ 34.0 to 35.0 feet: Increasing sand content; moist to wet.	
35			100%	CB				@ 35.0 to 36.0 feet: Mild hydrocarbon-like odor.	
36								@ 36.0 to 38.0 feet: Very dark grayish-brown mottling.	
37									
38						PID = 672 ppm			
39									
40								40.0 to 41.5 feet: SILTY SAND (SM); very dark gray; 30% fines; 70% sand, fine; trace mica and silt nodules; wet.	
41								@ 40.0 to 40.5 feet: Very dark grayish-brown mottling.	
42								41.5 to 46.0 feet: SILT WITH SAND (ML); very dark gray; 80% fines, low to medium plasticity; 20% sand, very fine to fine; trace mica and friable white fine-to-medium sand-sized material (ash?);	

**NOTES:** 1. bgs = below ground surface. 2. CB = core barrel soil sampler. 3. ppm = parts per million. 4. PID = photoionization detector, soil head space reading in ppm. 5. PVC = polyvinyl chloride. 6. TOC = top of casing. 7. Depths are approximate and relative to feet bgs. 8. Horizontal Datum: NAD 83/91, Oregon State Plane Coordinate System, North Zone, International Feet, HARN. 9. Vertical Datum: NGVD 29/47. 10. Seal placed from 30 to 35 feet bgs and from 160 to 163 feet bgs using 3/8-inch bentonite chips, hydrated in place. 11. A magnet was held to soil from 90 to 135 feet bgs at approximately 1-foot intervals. No reaction was observed. 12. DNAPL = dense nonaqueous-phase liquid. 13. NR = not recorded.

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method	Sample Data			Blows/6"	Lithologic Column	Soil Description
					Number	Name (Type)				
43										moist.
44										@ 43.5 feet: 8-inch-thick lens of SANDY SILT (ML); very dark gray; 55% fines; 45% sand; trace mica; moist to wet.
45			95%	CB						
46										46.0 to 61.0 feet: SILTY SAND (SM); very dark gray; 15-30% fines; 70-85% sand, fine; trace mica; moist.
47										
48										
49										@ 49.0 to 50.0 feet: Very dark grayish brown mottling.
50										@ 50.0 feet: 6-inch-thick lens of SILT WITH SAND (ML); very dark gray; 80% fines; 20% sand; trace mica; moist.
51										
52										
53										
54										@ 53.5 feet: 6-inch-thick lens of SANDY SILT (ML); very dark gray; 55% fines; 45% sand; trace mica; moist to wet.
55			90%	CB						
56										
57										
58										
59										
60										
61										61.0 to 62.0 feet: SILT WITH SAND (ML); very dark gray; 80% fines, low to medium plasticity; 20% sand, very fine to fine; trace mica; moist.
62										62.0 to 69.5 feet: SILTY SAND (SM); very dark gray; 15-30% fines; 70-85% sand, fine; trace mica; moist.
63										
64										
65										

PID = 8.1 ppm

GBLWC WA\GINTGINT\PROJECTS\8128-01\WS47-183.GPJ 9/3/15

**NOTES:** 1. bgs = below ground surface. 2. CB = core barrel soil sampler. 3. ppm = parts per million. 4. PID = photoionization detector, soil head space reading in ppm. 5. PVC = polyvinyl chloride. 6. TOC = top of casing. 7. Depths are approximate and relative to feet bgs. 8. Horizontal Datum: NAD 83/91, Oregon State Plane Coordinate System, North Zone, International Feet, HARN. 9. Vertical Datum: NGVD 29/47. 10. Seal placed from 30 to 35 feet bgs and from 160 to 163 feet bgs using 3/8-inch bentonite chips, hydrated in place. 11. A magnet was held to soil from 90 to 135 feet bgs at approximately 1-foot intervals. No reaction was observed. 12. DNAPL = dense nonaqueous-phase liquid. 13. NR = not recorded.

**Maul Foster & Alongi, Inc.**

**Geologic Borehole Log/Well Construction**

Project Number  
**8128.01.08**

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Depth (feet, BGS)	Well Details	Sample Data				Blows/6"	Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method	Number			
66		95%	CB					@ 65.0 to 69.5 feet: Trace silt nodules.
67								@ 66.0 feet: 3-inch-thick lens of SILT WITH SAND (ML); very dark gray; 70-80% fines, low to medium plasticity, firm; 20-30% sand, very fine to fine; trace mica and rootlets; moist.
68								
69								
70								69.5 to 70.5 feet: SANDY SILT (ML) grading to SILT (ML); very dark gray; trace mica; moist.
71								70.5 to 71.5 feet: SILTY SAND (SM) to SANDY SILT (ML); very dark gray; 50% fines; 50% sand; trace mica; moist.
72								@ 70.5 feet: 1-inch-thick layer of woody debris.
73								@ 71.4 feet: 5-inch-thick lens of SANDY SILT (ML); very dark gray; 55% fines; 45% sand; moist.
74								71.5 to 75.0 feet: SILTY SAND (SM); very dark gray; 15-30% fines; 70-85% sand, fine; trace mica and silt nodules; moist.
75								@ 74.5 to 75.0 feet: Twig, approximately 2-3 millimeters in thickness; increase in fines to 40%.
76		95%	CB					75.0 to 76.5 feet: SILT WITH SAND (ML); very dark gray; 70% fines, low to medium plasticity; 30% sand, very fine to fine; trace mica, plant material, and friable white fine to medium sand-sized material (ash?); moist.
77								76.5 to 77.0 feet: SILTY SAND (SM); very dark gray; 20-30% fines; 70-80% sand, fine; trace mica; moist to wet.
78								77.0 to 78.0 feet: SILT WITH SAND (ML); very dark gray; 70% fines, low to medium plasticity; 30% sand, very fine to fine; trace mica, plant material, and friable white fine to medium sand-sized material (ash?); moist.
79								78.0 to 79.5 feet: SANDY SILT (ML) to SILTY SAND (SM); very dark gray; 50% fines; 50% sand; trace mica; moist.
80								79.5 to 80.0 feet: SILT WITH SAND (ML); very dark gray; 70% fines, low to medium plasticity; 30% sand, very fine to fine; trace mica, plant material, and friable white fine to medium sand-sized material (ash?); moist.
81								80.0 to 80.5 feet: SANDY SILT (ML); very dark gray; 55% fines; 45% sand, very fine to fine; trace mica; wet.
82								80.5 to 83.0 feet: SILTY SAND (SM); very dark gray; 15-30% fines; 70-85% sand, very fine to fine; trace mica; moist.
83								
84								83.0 to 84.5 feet: SILT WITH SAND (ML); very dark gray; 70-80% fines, low to medium plasticity; 20-30% sand; trace mica and plant material; moist. Lenses of SILTY SAND (SM) up to 1 inch thick.
85		100%	CB					84.5 to 85.0 feet: SILTY SAND (SM); very dark gray; 30% fines; 70% sand, very fine to fine; trace mica; moist.
86								85.0 to 91.5 feet: SANDY SILT (ML); very dark gray; 55-70% fines, low to medium plasticity; 30-45% sand, very fine to fine; trace mica, plant material, and friable white fine to medium sand-sized material (ash?); moist. Lenses of SILTY SAND (SM); very dark gray; 30% fines; 70% sand; trace mica; moist. Lenses are up to 12 inches thick.
87								

PID = 6.2 ppm

PID = 4.1 ppm

**NOTES:** 1. bgs = below ground surface. 2. CB = core barrel soil sampler. 3. ppm = parts per million. 4. PID = photoionization detector, soil head space reading in ppm. 5. PVC = polyvinyl chloride. 6. TOC = top of casing. 7. Depths are approximate and relative to feet bgs. 8. Horizontal Datum: NAD 83/91, Oregon State Plane Coordinate System, North Zone, International Feet, HARN. 9. Vertical Datum: NGVD 29/47. 10. Seal placed from 30 to 35 feet bgs and from 160 to 163 feet bgs using 3/8-inch bentonite chips, hydrated in place. 11. A magnet was held to soil from 90 to 135 feet bgs at approximately 1-foot intervals. No reaction was observed. 12. DNAPL = dense nonaqueous-phase liquid. 13. NR = not recorded.

Depth (feet, BGS)	Well Details	Sample Data					Blows/6"	Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method	Number	Name (Type)			
88									
89									
90									
91									
92								91.5 to 96.0 feet: <i>SILTY SAND (SM); very dark gray; 20-30% fines; 70-80% sand, very fine to fine; trace mica; moist.</i>	
93									
94									
95		100%		CB				@ 95.0 to 96.0 feet: <i>Decrease in fines to 15%. Mild unidentifiable odor.</i>	
96								96.0 to 100.0 feet: <i>SILT WITH SAND (ML); very dark gray; 70-80% fines, low plasticity; 20-30% sand, very fine to fine; trace mica, plant material, and friable white fine to medium sand-sized material (ash?); mild unidentifiable odor, decreasing with depth; moist.</i>	
97									
98									
99									
100								100.0 to 100.5 feet: <i>SAND WITH SILT (SP-SM); very dark gray; 10% fines; 90% sand, very fine to fine; trace mica; moist.</i>	
101								100.5 to 105.0 feet: <i>Interbedded SILTY SAND (SM), SANDY SILT (ML), and SILT (ML); very dark gray; trace mica; moist. Beds are 1/2 inch to 6 inches thick.</i>	
102									
103									
104									
105		100%		CB				105.0 to 108.0 feet: <i>SAND WITH SILT (SP-SM); very dark gray; 15% fines; 85% sand, very fine to fine; trace mica and red and green lithics; mild unidentifiable odor; moist.</i>	
106									
107									
108								108.0 to 115.0 feet: <i>Interbedded SILTY SAND (SM); very dark gray; 15-30% fines; 70-85% sand, very fine to fine; trace mica and red and green lithics; moist; and SILT WITH SAND (ML); very dark gray; 80% fines, low to medium plasticity; 20% sand; trace mica; moist. Beds are 1 inch to 9 inches thick.</i>	
109									
110									

**NOTES:** 1. bgs = below ground surface. 2. CB = core barrel soil sampler. 3. ppm = parts per million. 4. PID = photoionization detector, soil head space reading in ppm. 5. PVC = polyvinyl chloride. 6. TOC = top of casing. 7. Depths are approximate and relative to feet bgs. 8. Horizontal Datum: NAD 83/91, Oregon State Plane Coordinate System, North Zone, International Feet, HARN. 9. Vertical Datum: NGVD 29/47. 10. Seal placed from 30 to 35 feet bgs and from 160 to 163 feet bgs using 3/8-inch bentonite chips, hydrated in place. 11. A magnet was held to soil from 90 to 135 feet bgs at approximately 1-foot intervals. No reaction was observed. 12. DNAPL = dense nonaqueous-phase liquid. 13. NR = not recorded.

Depth (feet, BGS)	Well Details	Sample Data						Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"		
111									
112									
113						PID = 6.8 ppm		@ 113.0 to 115.0 feet: Mild hydrocarbon-like odor.	
114									
115		NR		CB				115.0 to 116.7 feet: SILT WITH SAND (ML); very dark gray; 70% fines, low to medium plasticity; 30% sand, very fine to fine; trace mica, plant material, and friable white fine to medium sand-sized material (ash?); mild hydrocarbon-like odor; trace blue sheen on outside of soil core; moist.	
116									
117								116.7 to 117.3 feet: SILTY SAND (SM); very dark gray; 30-40% fines; 60-70% sand, very fine to fine; trace mica; mild hydrocarbon-like odor; moist to wet.	
118						PID = 4.7 ppm		117.3 to 118.2 feet: SILT WITH SAND (ML); very dark gray; 70% fines; 30% sand; trace mica and friable white fine to medium sand-sized material (ash?); mild hydrocarbon-like odor; moist.	
119								118.2 to 121.0 feet: SILTY SAND (SM); very dark gray; 30% fines; 70% sand, very fine to fine; trace mica; moist.	
120						WS47-SO-118.2-121		@ 120 feet: Twig, approximately 2 inches long and 2 to 3 millimeters thick.	
121									
122								121.0 to 125.0 feet: SILT WITH SAND (ML); very dark gray; 80% fines, low to medium plasticity; 20% sand, very fine to fine; trace mica and friable white fine to medium sand-sized material (ash?); moist.	
123						PID = 6.4 ppm WS47-SO-121-125			
124									
125		95%		CB				125.0 to 126.5 feet: SANDY SILT (ML); very dark gray; 60% fines, non to low plasticity; 40% sand, very fine to fine; trace mica and woody debris; mild hydrocarbon-like odor; trace blue sheen on outside of soil core; moist.	
126									
127						WS47-SO-125-126.5		126.5 to 144.0 feet: SAND WITH SILT (SP-SM); very dark gray; 15% fines; 85% sand; trace mica; moist.	
128						PID = 154 ppm WS47-SO-126.5-128.5		@ 126.5 to 135.0 feet: Mild hydrocarbon-like odor; trace silt nodules.	
129								@ 128.5 to 144.0 feet: Decrease in fines to 5-10%.	
130									
131									
132						WS47-SO-128.5-135			

**NOTES:** 1. bgs = below ground surface. 2. CB = core barrel soil sampler. 3. ppm = parts per million. 4. PID = photoionization detector, soil head space reading in ppm. 5. PVC = polyvinyl chloride. 6. TOC = top of casing. 7. Depths are approximate and relative to feet bgs. 8. Horizontal Datum: NAD 83/91, Oregon State Plane Coordinate System, North Zone, International Feet, HARN. 9. Vertical Datum: NGVD 29/47. 10. Seal placed from 30 to 35 feet bgs and from 160 to 163 feet bgs using 3/8-inch bentonite chips, hydrated in place. 11. A magnet was held to soil from 90 to 135 feet bgs at approximately 1-foot intervals. No reaction was observed. 12. DNAPL = dense nonaqueous-phase liquid. 13. NR = not recorded.

Depth (feet, BGS)	Well Details	Sample Data					Blows/6"	Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method	Number	Name (Type)			
133									
134									
135		85%	CB						@ 135.0 to 144.0 feet: Hydrocarbon-like odor.
136									
137									
138									
139									@ 138.5 feet: 1.5-inch-thick lens of SILT (ML); very dark gray; 80-90% fines; 10-20% sand; trace mica. @ 138.5 to 141.5 feet: Strong hydrocarbon-like odor, rainbow sheen, and moderate dark brown staining. Dark brown staining observed on inside of core bags and on gloves after handling soil.
140									
141									
142									@ 141.5 to 143.0 feet: Slight rainbow sheen when wet. Sheen decreasing with depth.
143									
144									
145		100%	CB						144.0 to 145.0 feet: NO RECOVERY. Soil fell out of the bottom of the core barrel. 145.0 to 183.0 feet: SAND WITH SILT (SP-SM); very dark gray; 5-10% fines; 90-95% sand, fine; trace mica; moist. @ 145.0 to 147.0: Hydrocarbon-like odor; trace blue sheen when wet.
146									
147									@ 147.0 to 150.0 feet: Increase in fines to 15%; strong hydrocarbon-like odor.
148									@ 148.5 to 149.5 feet: Dense; compact. Some blue-silver sheen; light to moderate dark brown staining. Some dark brown staining is observed on inside of core bags and on gloves after handling soil.
149									
150		50%	CB						@ 150.0 feet: 1-inch-thick lens of SILT (ML); very dark gray; 80-90% fines; 10-20% sand; trace mica. @ 150.0 to 161.0 feet: Hydrocarbon-like odor, decreasing with depth. @ 150.0 to 183.0 feet: Trace silt nodules; moist to wet.
151									
152									
153		100%	CB						
154									
155									

**NOTES:** 1. bgs = below ground surface. 2. CB = core barrel soil sampler. 3. ppm = parts per million. 4. PID = photoionization detector, soil head space reading in ppm. 5. PVC = polyvinyl chloride. 6. TOC = top of casing. 7. Depths are approximate and relative to feet bgs. 8. Horizontal Datum: NAD 83/91, Oregon State Plane Coordinate System, North Zone, International Feet, HARN. 9. Vertical Datum: NGVD 29/47. 10. Seal placed from 30 to 35 feet bgs and from 160 to 163 feet bgs using 3/8-inch bentonite chips, hydrated in place. 11. A magnet was held to soil from 90 to 135 feet bgs at approximately 1-foot intervals. No reaction was observed. 12. DNAPL = dense nonaqueous-phase liquid. 13. NR = not recorded.

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method	Sample Data			Lithologic Column	Soil Description
					Number	Name (Type)	Blows/6"		
156									
157									
158									
159									
160									
161									
162									
163									
164									
165									
166									
167									
168									
169									
170									
171									
172									
173									
174									
175									
176									
177									

PID = 4.9 ppm

WS47-SO-153-163

PID = 6.1 ppm

WS47-SO-162

75% CB

@ 162.0 feet: 2-inch-thick lens of SILT (ML).

@ 163.0 to 183.0 feet: Trace woody debris.

WS47-SO-163-168

PID = 7.6 ppm

WS47-SO-169

@ 169.0 feet: 9-inch-thick lens of SILT (ML); 80-90% fines; 10-20% sand.

@ 171.0 feet: 3-inch-thick lens of SILT (ML).

@ 174.0 feet: 3-inch-long wood fragment.

**NOTES:** 1. bgs = below ground surface. 2. CB = core barrel soil sampler. 3. ppm = parts per million. 4. PID = photoionization detector, soil head space reading in ppm. 5. PVC = polyvinyl chloride. 6. TOC = top of casing. 7. Depths are approximate and relative to feet bgs. 8. Horizontal Datum: NAD 83/91, Oregon State Plane Coordinate System, North Zone, International Feet, HARN. 9. Vertical Datum: NGVD 29/47. 10. Seal placed from 30 to 35 feet bgs and from 160 to 163 feet bgs using 3/8-inch bentonite chips, hydrated in place. 11. A magnet was held to soil from 90 to 135 feet bgs at approximately 1-foot intervals. No reaction was observed. 12. DNAPL = dense nonaqueous-phase liquid. 13. NR = not recorded.

**Geologic Borehole Log/Well Construction**

Project Number  
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Well Number  
WS47-183

Sheet  
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Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method	Sample Data			Blows/6"	Lithologic Column	Soil Description
					Number	Name (Type)				
178										
179										
180										
181										
182										
183										

PID = 5.7 ppm

Total Depth = 183.0 ft bgs.

**WS47-183 Completion Details**

Oregon Water Resources Department Well Start Card Number:  
1025931

Oregon Water Resources Department Well Identification Number:  
L115779

**Boring Completion Details:**

0.0 to 10.0 feet bgs: Removed using airknife and vac truck to check for underground utilities.

0.0 to 35.0 feet bgs: 10-inch-diameter temporary, threaded steel, isolation casing.

0.0 to 163.0 feet bgs: 8-inch-diameter temporary, threaded steel, isolation casing.

0.0 to 183.0 feet bgs: 6-inch-diameter temporary, threaded steel, isolation casing.

10.0 to 35.0 feet bgs: 8-inch-diameter core barrel sampler.

35.0 to 163.0 feet bgs: 7-inch-diameter core barrel sampler.

163.0 to 183.0 feet bgs: 5-inch-diameter core barrel sampler.

0.0 to 2.5 feet bgs: 8-inch-diameter flush mount Sherwood monument and cement seal.

2.5 to 3.0 feet bgs: pea gravel.

3.0 to 13.0 feet bgs: 3/8-inch bentonite chips hydrated with potable water.

13.0 to 20.0 feet bgs: organoclay-bentonite grout slurry, 9.7 pounds per gallon.

20.0 to 26.5 feet bgs: bentonite grout slurry, 10.1 pounds per gallon.

26.5 to 33.0 feet bgs: organoclay-bentonite grout slurry, 9.75 pounds per gallon.

33.0 to 132.0 feet bgs: bentonite grout slurry, 9.8 to 10.1 pounds per gallon.

132.0 to 153.0 feet bgs: organoclay-bentonite grout slurry, 9.75 to 9.8 pounds per gallon.

153.0 to 167.0 feet bgs: bentonite grout slurry, 9.7 pounds per gallon.

167.0 to 169.0 feet bgs: 20x40 washed Colorado silica sand, transition sand.

169.0 to 183.0 feet bgs: 10x20 washed Colorado silica sand, filter pack.

**Well Completion Details:**

0.0 to 172.0 feet bgs: 2-inch-diameter, schedule 40 PVC blank riser pipe with centralizers at 20-foot intervals.

172.0 to 182.0 feet bgs: 2-inch-diameter, stainless steel wire wrapped screen, 0.010-slot.

@ 182.0 feet bgs: DNAPL funnel.

182.0 to 183.0 feet bgs: 2-inch-diameter, stainless steel sump.

**NOTES:** 1. bgs = below ground surface. 2. CB = core barrel soil sampler. 3. ppm = parts per million. 4. PID = photoionization detector, soil head space reading in ppm. 5. PVC = polyvinyl chloride. 6. TOC = top of casing. 7. Depths are approximate and relative to feet bgs. 8. Horizontal Datum: NAD 83/91, Oregon State Plane Coordinate System, North Zone, International Feet, HARN. 9. Vertical Datum: NGVD 29/47. 10. Seal placed from 30 to 35 feet bgs and from 160 to 163 feet bgs using 3/8-inch bentonite chips, hydrated in place. 11. A magnet was held to soil from 90 to 135 feet bgs at approximately 1-foot intervals. No reaction was observed. 12. DNAPL = dense nonaqueous-phase liquid. 13. NR = not recorded.

# ATTACHMENT D

OWRD SPECIAL STANDARDS





# Oregon

Kate Brown, Governor

## Water Resources Department

North Mall Office Building  
725 Summer St NE, Suite A  
Salem, OR 97301  
Phone (503) 986-0900  
Fax (503) 986-0904  
[www.wrd.state.or.us](http://www.wrd.state.or.us)

April 2, 2015

TRENT CASTNER MWC #10306  
CASCADE DRILLING INC  
13600 SE AMBLER RD  
CLACKAMAS, OREGON 97015

### FINAL ORDER

Dear Mr. Castner:

The Special Standards Request Form you submitted for owner: Siltronic, Start Card number 1025931 is hereby approved for the following: You may use an Organoclay based grout (see attached) to seal these monitoring wells in the interval where NAPL is present. In intervals where NAPL is not present an approved sealing material shall be used. A copy of your Special Standards Request Form is enclosed. All other standards must be adhered to.

The Well Construction Standards serve to protect ground water resources. By approving and issuing this special construction standard the Oregon Water Resources Department is not representing that a well constructed in accordance with this condition will maintain structural integrity or that it meets engineering standards. The well constructor/or landowner is responsible for ensuring that a well is constructed in a manner that protects ground water resources as required under Oregon Administrative Rules 690-200 through 690-240.

If you have any questions regarding this letter, I may be contacted at (503) 986-0852, or by e-mail at [Joel.W.Jeffery@wrdd.state.or.us](mailto:Joel.W.Jeffery@wrdd.state.or.us).

Sincerely,

Joel Jeffery, Coordinator  
Well Construction Program  
Well Construction and Compliance Section

enclosures

cc: NW Region Well Inspector  
File

This is a final order in other than a contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60 day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-0080 you may either petition for judicial review or petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.





Oregon Water Resources Department  
 725 Summer Street NE, Suite A  
 Salem Oregon 97301-1266  
 (503) 986-0900  
 www.wrd.state.or.us

# Special Standards Request Form

## REQUEST FOR WRITTEN APPROVAL TO USE CONSTRUCTION METHODS NOT INCLUDED IN OREGON ADMINISTRATIVE RULES 690-200 THROUGH 690-240

Before the request can be considered, this form must be completed. Requests shall be submitted to the Well Construction Program Coordinator, Water Resources Department, 725 Summer Street NE, Suite A, Salem OR 97301-1266. Requests may also be considered by the appropriate Regional Manager.

Date of request: April 1, 2015 Oral approval date (if applicable): N/A

Bonded Well Constructor (name, license #, and mailing address): Trent Castner 10306

13600 Southeast Ambler Rd., Clackamas, OR 97105

(1) Location of Well: Northwest 1/4 Northwest 1/4 Tax lot 1200 Section 13,  
 Township One N, Range One W, Multnomah County  
 Address at well site: 7200 NW. Front Ave., Portland, OR

(2) Start Card Number(s)(for work to be done): 1025931

(3) Name and Address of Land Owner: Siltronic  
7200 NW. Front Ave., Portland, OR

(4) Distance to the nearest septic tank, drainfield, closed sewage line (if water supply well)  
Unknown

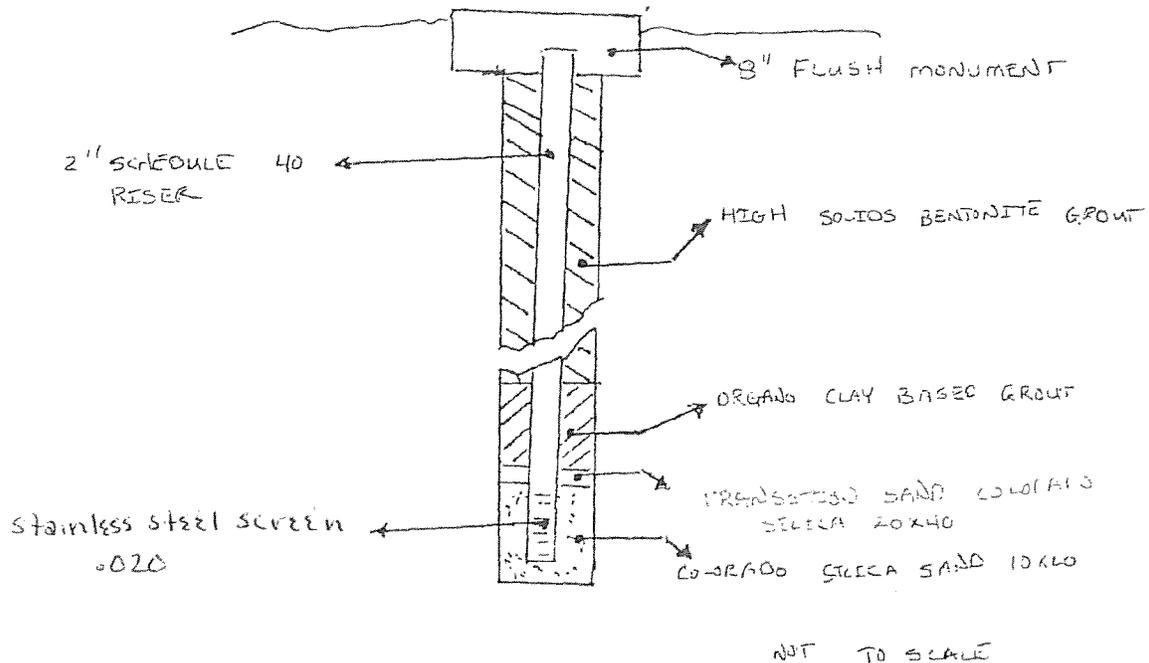
(5) The unusual site conditions which necessitate this request: Due to the high concentrations of NAPAL.  
The landowner would like to use organo- clay to seal  
the well bore hole, in the zones showing high concentrations of NAPAL.

(6) The proposed construction methods that the bonded well constructor believes will be adequate for this well: (attach additional pages if needed)  
The client on-site will observe the sonic core, and make the determination of  
where the organo- clay should be placed. The mixture will be 10% organo- clay to the high solids bentonite grout.

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APR 01 2015

- (7) Diagram showing the pertinent features of the proposed well design and construction: (attach additional pages if needed)



PLEASE NOTE:

- (1) The Well Construction Standards serve to protect ground water resources. By approving and issuing this special construction standard the Oregon Water Resources Department is not representing that a well constructed in accordance with this condition will maintain structural integrity or that it meets engineering standards. The well constructor/or landowner is responsible for ensuring that a well is constructed in a manner that protects ground water resources as required under Oregon Administrative Rules 690-200 through 690-240.
- (2) If it should be determined at some future date that the well, due to its construction, is allowing ground water contamination, waste or loss of artesian pressure, the undersigned shall return to the site and rectify the problem.
- (3) If oral approval was granted, a written request must be submitted to the Department either within three (3) working days of the date of oral approval or prior to the completion of the associated well work. Failure to submit a written request as described above may void prior oral approval.

I have read and understand the above information. I further attest that the information provided is accurate to the best of my knowledge.

Bonded Constructor Signature: J. Font Carter

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**Startcard Number:** 1025931

Received: 4/1/2015 Fee Received: 4/1/2015

License Nbr  Phone Nbr

Driller Name

Driller Company

**Owner Information**

Company

First Name  Last Name

Street1

Street2

City  State  Zip

Home Phone

Work Phone

**Type of Work**

Fee Required  New

Conversion

Deepening

No Fee  Alteration

Required  Abandonment

Original Startcard#

Original Well Tag#

**Construction**

Proposed Commencement Date  Existing/Proposed Depth(ft)  Diameter (inches)

**Use**

Domestic  Community  Industrial  Irrigation

Thermal  Injection  Livestock Other:

Monitoring  Piezometer  Dewatering

**Proposed Well Location**

Street address of well

County  Township   Range   Section

QQ/Q   Latitude  Longitude

Taxlot

**HAHN AND ASSOCIATES, INC.**  
ENVIRONMENTAL CONSULTANTS

**RECEIVED**

September 18, 2008

SEP 24 2008

Mr. Kristopher Byrd  
Oregon Water Resources Department  
Well Construction and Compliance Section  
725 Summit 450-42<sup>nd</sup> Street NE, Ste A  
Salem, Oregon 97310

WATER RESOURCES DEPT  
SALEM, OREGON

HAI Project Nos. 2708 and 5237  
DEQ ECSI File No. 84

**SUBJECT: Alternative Grout Slurry for Borehole Abandonment and Seal for  
Permanent Groundwater Monitoring Wells, NW Natural Gasco Property,  
7900 NW St, Helens Road and Siltronic Corporation Property, 7200 NW  
Front Avenue, Portland, Oregon**

Dear Mr. Byrd:

Hahn and Associates, Inc. (HAI), on behalf of NW Natural, is requesting approval from the Oregon Water Resources Department (OWRD) for the use of a site-specific bentonite grout for soil boring abandonment work and well sealant for future groundwater monitoring or groundwater extraction wells installed as part of site investigation and clean-up activities at the above referenced contiguous properties (the Site)

NW Natural is conducting investigation and clean-up activities at the Site with oversight from the Oregon Department of Environmental Quality. The site has been impacted predominantly by polynuclear aromatic hydrocarbons, benzene, and cyanide. Trichloroethene and related degradation products have also been detected. Dissolved phase contamination and dense non aqueous phase liquid (DNAPL – a creosote-like oil with a density greater than water) are present at the Site.

As specified in OAR 690-240-0475, well seal material shall consist of a physically and chemically stable hydrated grout consisting of 1) neat cement; or 2) sodium bentonite; or 3) a cement-bentonite grout mixture containing no more than 5 percent bentonite by dry weight; or 4) sodium bentonite granules, pellets, or chips placed in an unhydrated state and subsequently hydrated downhole. OAR 690-240-0475 acknowledges that appropriate sealing materials may vary depending on site characteristics and substances being monitored.

As part of the pre-design process related to a pending source control action at the Site, Glynn Geotechnical Engineering has recently completed testing the compatibility and effectiveness of various bentonite and cement grout slurry sealing materials with contaminated groundwater and dense non aqueous phase liquids (DNAPL) obtained from the site. As provided within the attached letters of August 22 and 28, 2008 (Mark Glynn to Mike Crystal), it has been determined that a bentonite / Organoclay blend, consisting of approximately 9 parts Wyoming sodium bentonite and 1 part Organoclay by volume, and mixed to a 20% solids content, will be a superior sealant as compared to the sodium bentonite or cement bentonite grout slurries specified in OAR 690-240-0475.

The specific mixture that has been tested and recommended for use consists of granular CETCO Volclay CG-50 and PM-200 Organoclay. Technical data sheets for both of

these products are attached. A technical reference document is also attached that describes the applicability and function of Organoclay as a sealant in situations where high concentrations of organic contaminants are present. Please be advised that although the CG-50 product is not marketed by CETCO as a well seal material, the supplier has indicated that it is the same bentonite source that is marketed for differing uses under various names. An advantage to the CG-50 and PM-200 Organoclay mixture is that granular sizing of the two products is similar which better ensures a homogenous blend, and that CETGO can pre-mix and bag the 9:1 bentonite / Organoclay blend – thereby eliminating the need to prepare the proper blend in the field.

Testing by Glynn Geotechnical Engineering has determined that to achieve a slurry that is 20% solids (by volume), a single bag of the blend weighing 50 pounds should be mixed with 18.26 gallons of water. The solution should be blended with an electric paddle mixer. The resulting mud weight of the 20% solids solution will be 71.7 pounds per cubic foot (plus or minus 1 pound per cubic foot). The preceding equates to a mud weight of between approximately 9.5 to 9.7 pounds per gallon at a 20% solids content.

We are seeking approval from OWRD and DEQ to use the bentonite / Organoclay grout slurry mixture described above for those applications necessitating the use of a grout slurry sealant. All requirements concerning placement method and appropriate depth of placement within the borehole or well annulus, as well as verification of the appropriate mud weight, will remain as specified within OAR 690-240. Approval from the DEQ for use of the bentonite / Organoclay grout slurry described herein is being requested concurrently with this request to OWRD.

Should you have any questions, please contact the undersigned.

Sincerely,



Rob Ede, R.G.  
Principal

robe@hahnenv.com

- c Mr. Bob Wyatt, NW Natural
- Ms. Patty Dost, Schwabe, Williamson & Wyatt
- Mr. Carl Stivers, Anchor Environmental, L.L.C.
- Mr. John Edwards, Anchor Environmental, L.L.C.
- Mr. Dana Bayuk, DEQ NW Region
- Mr. Henning Larsen, DEQ NW Region
- Mr. Tom Gainer, DEQ NW Region
- Mr. Tom McCue, Siltronic Corporation

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SALEM, OREGON

ATTACHMENT A

Glynn Geotechnical Engineering Documentation  
Well Seal Evaluation and Recommendations

Correspondence dated  
August 22, 2008 and August 29, 2008

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SEP 29 2008

WATER RESOURCES DEPT  
SALEM, OREGON



a member of the GLYNN GROUP

August 29, 2008

Sevenson Environmental Services  
2749 Lockport Road  
Niagara Falls, NY 14304

Attn: Mr. Michael D. Crystal

SUBJECT: Well Seal Material Standards  
Gasco Site, Portland Oregon  
GGE 05-1043C

Dear Mr. Crystal:

On August 22, 2008 I sent you a letter regarding my evaluation of a bentonite/organo clay blend that would serve as a proper seal for monitoring wells at the Gasco Site. The proposed blend is comprised of 90% bentonite and 10% Organo Clay by volume.

To achieve a solution of 20% solids (by volume), a single bag of the blend weighing 50 pounds should be mixed with 18.26 gallons of water. The mud weight of the solution, as testing in the lab is 71.7 pcf. This unit weight was determined 15 minutes after the addition of water. The field measured unit weight should be expected to vary by no more than 1.0 pct. We suggest that the solution be blended with an electric paddle mixer.

Please contact me directly if you need additional information

Sincerely,

Mark W. Glynn, P.E.  
Consulting Engineer, Principal

Civil • Structural • Geotechnical • Materials Testing • Consulting

GLYNN GEOTECHNICAL ENGINEERING

45 South Transit Street, Lockport, New York 14094  
voice 716.635.6923 / fax 716.635.6983  
www.glynngroup.com

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WATER RESOURCES DEPT  
SALEM OREGON



a member of the GLYNN GROUP

August 22, 2008

Sevenson Environmental Services  
2749 Lockport Road  
Niagara Falls, NY 14304

ATTN: Mr. Michael D. Crystal  
Vice President

SUBJECT: Well Seal Evaluation  
Gasco Site, Portland Oregon  
GGE 05-1043C

Dear Mr. Crystal:

In response to your request I have reviewed the current issue regarding the failure of sealing materials in groundwater wells at the Gasco site. Based on substantive test data, it is my professional opinion that the bentonite/organo clay blend would be an effective replacement for plain bentonite grout in the construction of groundwater monitoring wells at the Gasco site.

By way of a few past projects, Glynn Geotechnical Engineering (GGE) has tested a recipe of bentonite and organo clay as a sealant against groundwater that contained significant DNAPL hydrocarbons. In each and every case the bentonite/organo clay blend, consisting of approximately 9 parts Wyoming bentonite and 1 part organo clay by volume, has demonstrated a compatibility with the groundwater at a permeability of less than 1.0E - 007 cm/sec. In general, the testing has indicated the permeability tends to decrease over time as result of continuing swell characteristics of the blend.

Within the past month a test of the compatibility/permeability of the blend was completed for the Gasco project. In this test the blend was tested against the site groundwater and effectively demonstrated that the bentonite/organo clay would be an effective seal for Sevenson's patented sheeting system.

In our tests we have used bentonite identified as CETCO and Volclay. Results of our tests indicate no remarkable differences in the results from the different bentonites. These results tend to substantiate the supplier claims that the same Wyoming bentonite is sold under different names. Therefore, my recommendation for the use of the bentonite/organo clay blend is made irrespective of the identifier for the bentonite. Specifically I would support the use of CETCO Pure Gold Grout for the bentonite portion of the blend.

Please do not hesitate to contact me with any questions or comments.

Sincerely,

Mark W. Glynn, P.E.  
Consulting Engineer, Principal Oregon: 80419 P.E.

GLYNN GEOTECHNICAL ENGINEERING

415 South Transit Street, Lockport, New York 14094  
voice 716.625.6933 / fax 716.625.6983  
www.glynn-group.com

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ATTACHMENT C  
CETCO Technical Reference  
Organoclay Media as a Sealant Additive

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SALEM, OREGON

HAHN AND ASSOCIATES, INC



**UTILIZING ORGANOCLAY™ MEDIA AS A SORBENT  
ADDITIVE TO DECREASE ORGANIC MOBILITY AND  
HYDRAULIC CONDUCTIVITY**

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SALEM, OREGON

**BACKGROUND**

Organic contaminants migrating with groundwater sources continue to offer significant challenges in terrestrial remediation applications. While selective media such as granular activated carbon (GAC) have proven to be successful at adsorbing soluble organics, these media may have reduced performance due

to blinding in the presence of high molecular weight organic matter and may be prematurely saturated due to the active sites competing for inorganic matter as well as the organic contaminants of concern. An alternative technology is emerging that addresses this problem with a clay-based adsorption media, which effectively and efficiently stabilizes low-soluble organic matter. Organoclay™ Media utilizes granular sodium bentonite clay, which has been chemically modified to attract organic matter without absorbing water. The unique platelet structure of bentonite provides tremendous surface area and the capacity of the media to adsorb over 60 percent (by weight) in organic matter.

Organoclays have been utilized as additives to permeable reactive barriers (PRB), amendments to soil liners and as a soil stabilization agent to reduce the transport of organic contaminants. The primary focus has been on the ability for this specialty sorbent to effectively adsorb low soluble organic matter from aqueous solutions. Organoclay has been also been used as an additive to soil containment barriers and low permeable slurry walls. It has been shown to reduce transport of organic contaminants and improve the hydraulic conductivity characteristics when petroleum based hydrocarbons are present. (Boldt-Leppin, Haug and Headley, 1996).

**APPLICABILITY AS A SOIL SEALANT**

Sodium bentonite clay has been utilized as soil admix for hydraulic barriers for a variety of remedial applications. The primary benefit of utilizing this specialty mineral is the fact that it is very hydrophilic and swells many times (by volume) in the presence of fresh water. The result is a barrier of very low hydraulic conductivity ( $< 10^{-9}$  m/s typical). The design of these barrier systems has focused on minimizing the flow of water. However, even with hydraulic conductivities of less than  $10^{-7}$  cm/s, the mass flux of many organic contaminants can be significant. While bentonite clay is able to minimize the advective flow of suspended contaminants, transport due to molecular diffusion can be a critical transport mechanism (Lake and Rowe, 2000, 2004). The inability of typical clays to impede diffusive transport has lead to new research on utilizing Organoclay and other specialty sorbents to amend standard bentonite-soil barriers. Recent studies have shown that hydraulic conductivity of sodium bentonite and earthen barriers amended with 3% (by weight) of certain types of Organoclay met or surpassed regulatory requirements of  $1 \times 10^{-7}$  cm/s. More importantly, transport simulations indicated that these modified barriers can retard benzene transport (Hunt, Smith, Burns and Rabideau, 2005)

**APPLICABILITY IN SOIL-BENTONITE SLURRY WALLS**

Slurry walls are physical barriers used to contain or direct the flow of groundwater. Most slurry walls are constructed of native soils, bentonite clay and water mixture. Portland cement and other self

TR 836  
1 2007

800.527.8946 Fax 847.577.5586

For the most up to date product information please visit our website, [www.cetco.com](http://www.cetco.com).

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hardening components are also often used if the design requires lower permeability ( $< 10^{-7}$  cm/s) or higher compressive strength. While these engineered barriers have long been used in construction applications to control seepage, they continue to gain popularity in remedial applications for the containment and redirection of contaminated groundwater. When constructing slurry walls, permeability is the critical parameter for designers and regulators. However, incompatibilities between traditional construction materials and site contaminants (if they are organic in nature) have led to the development of new compositions of traditional soil-bentonite slurry walls. These new designs include specialty sorbents to more effectively contain shorter chain hydrocarbons and other organic matter that may be capable of passing through barriers with permeability as low as  $10^{-7}$  cm/s. When mixed in to a standard slurry wall mix at a 2% (by weight) addition rate, Organoclay has proven to effectively minimize the migration of medium to light hydrocarbons previously passing through the barrier. Furthermore, within 14 days the perm value of the amended slurry wall was almost an order of magnitude lower than the standard bentonite formulation.

#### **APPLICABILITY AS A SPECIALTY GROUT**

Sheet piling consists of a series of panels with interlocking connections, driven into the ground to form an impermeable barrier. These panels can be constructed from a variety of materials such as steel, vinyl and plastic depending on the site specific contaminants present. While these specialty engineered barriers have proven to be impervious to aqueous solutions and migrating organic matter, they are sometimes susceptible to these solutions passing through the interlocking joints if not installed and sealed properly. A new specialty grout incorporating Organoclay and high swelling sodium bentonite clay has proven successful in creating an impermeable seal in the open cavities within these joints. Furthermore, the addition of Organoclay to this grout ensures that organic material migrating with these solutions will not pass beyond the piling. Grouts of this type may be used to seal known areas of high infiltration or permeable formations.

#### **SUMMARY**

Terrestrial remediation projects for organic contaminants pose many challenges for traditional technologies. Organoclay amendments to PRBs, soil liners, GCLs, slurry walls and grouts may be used to improve their performance preventing migration of these organic contaminants in both permeable and impermeable engineered barriers. Because individual site characteristics vary, project specific testing should be conducted to determine applicability.

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SALEM OREGON

TR 828  
1 2007

800.527.9948 Fax 547.577.5566

For the most up to date product information, please visit our website: [www.cetco.com](http://www.cetco.com)

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ATTACHMENT B

Technical Data Sheets

CETCO Volclay CG-50  
and  
CETCO PM-200 Organoclay

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WATER RESOURCES DEPT  
SALEM, OREGON

HAHJ AND ASSOCIATES, INC



**Physical Properties**

**Volclay® CG-50**

<b>Description:</b>	Volclay CG-50 is a natural, granular, high-swelling Wyoming sodium bentonite recommended for lining/sealing applications involving moist soils or those where it is necessary to minimize dust generation.									
<b>Applications:</b>	Soil/bentonite liners; general sealing applications									
<b>Composition:</b>	Sodium bentonite is a hydrous silicate of alumina primarily consisting of the clay mineral montmorillonite, which swells several times its own volume when wetted.									
<b>Free Swell</b>	24 ml/2g minimum (ACC 1010)									
<b>Filtrate Loss:</b>	18 ml maximum (API 13A)									
<b>Moisture Content:</b>	12 percent maximum as shipped									
<b>Particle Sizing:</b>	5 percent max. retained on a #10 mesh (2.00 mm) sieve 15 percent max. passing a #200 mesh (75 mm) sieve (ASTM D422)									
<b>Dry Bulk Density:</b>	65 lbs/ft <sup>3</sup> (1,040 kg/m <sup>3</sup> ) typical									
<b>Packaging:</b>	50 lb (22.5 kg) multi-wall paper bags; 2000-lb (900 kg) or 4,000 lb (1,800 kg) super sacks; or bulk.									
<b>Availability:</b>	F.O.B. Lovell, WY. Quantities less than 1 ton may be available locally.									
<b>Application Information:</b>	<table border="1"> <thead> <tr> <th>Primary Soil Type</th> <th>Typical Application Rate*</th> </tr> </thead> <tbody> <tr> <td>Sand</td> <td>8-10 lbs/ft<sup>2</sup> (40-50 kg/m<sup>2</sup>)</td> </tr> <tr> <td>Silt</td> <td>4-8 lbs/ft<sup>2</sup> (20-50 kg/m<sup>2</sup>)</td> </tr> <tr> <td>Clay</td> <td>2-4 lbs/ft<sup>2</sup> (10-20 kg/m<sup>2</sup>)</td> </tr> </tbody> </table> <p>* Application rates are for a soil bentonite liner mixed in a layer 6 inches (150mm) in thickness with a permeability of <math>1 \times 10^{-7}</math> cm/sec. Application rates above are shown for informational purposes only. All soils should be tested to determine specific application rates.</p>		Primary Soil Type	Typical Application Rate*	Sand	8-10 lbs/ft <sup>2</sup> (40-50 kg/m <sup>2</sup> )	Silt	4-8 lbs/ft <sup>2</sup> (20-50 kg/m <sup>2</sup> )	Clay	2-4 lbs/ft <sup>2</sup> (10-20 kg/m <sup>2</sup> )
Primary Soil Type	Typical Application Rate*									
Sand	8-10 lbs/ft <sup>2</sup> (40-50 kg/m <sup>2</sup> )									
Silt	4-8 lbs/ft <sup>2</sup> (20-50 kg/m <sup>2</sup> )									
Clay	2-4 lbs/ft <sup>2</sup> (10-20 kg/m <sup>2</sup> )									

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WATER RESOURCES DEPT  
SALEM, OREGON

Revised 3/03



**Technical Data**

## PM-200 ORGANOCLAY

MATERIAL PROPERTY	TEST METHOD	VALUE
Bulk Density Range	CETCO Test Method	44 – 56 lbs/ft <sup>3</sup>
Particle Size Distribution	US Standard Sieve Size	
	No. 10 (Retained)	1% Maximum
	No. 30 (Retained)	70% Minimum
	No. 50 (Retained)	25% Maximum
	No. 100 (Retained)	3% Maximum
	No. 100 (Passing)	1% Maximum
Hydraulic Conductivity	ASTM D 5084 modified	1 x 10 <sup>-3</sup> cm/sec minimum
Oil Adsorption Capacity	CETCO Test Method	0.5 lb of oil per lb of Organoclay minimum
Quaternary Amine Content	CETCO Test Method	25 – 33% quaternary amine loading

**A proprietary granular clay compound that reliably adsorbs oil and similar organics from water.**

**Packaging – 1,500 lb. supersacks (with approximately 22-24 tons per flatbed truck).**

Rev 3 - 8/8/07



1501 West Shore Drive 5th Floor, Arlington Heights, IL 60004 USA 800.527.9919 Fax 847.577.5566  
For the most up to date product information please visit our website, [www.sedimentremediation.com](http://www.sedimentremediation.com)  
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The information and data contained herein are believed to be accurate and reliable. CETCO makes no warranty of any kind and accepts no responsibility for the results obtained through application of this information.

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WATER RESOURCES DEPT  
SALEM OREGON

# ATTACHMENT E

OWRD WELL LOG



STATE OF OREGON
MONITORING WELL REPORT

(as required by ORS 537.765 & OAR 690-240-0395)

5/12/2015

WELL I.D. LABEL# L 115779

START CARD # 1025931

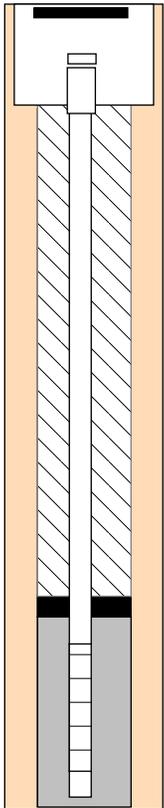
(1) LAND OWNER Owner Well I.D. WS-47-183

First Name Last Name
Company SILTRONIC CORPORATION
Address 7200 NW FRONT AVE
City PORTLAND State OR Zip 97210

(2) TYPE OF WORK [X] New [ ] Deepening [ ] Conversion
[ ] Alteration (repair/recondition) [ ] Abandonment

(3) DRILL METHOD
[ ] Rotary Air [ ] Rotary Mud [ ] Cable [ ] Hollow Stem Auger [ ] Cable Mud
[ ] Reverse Rotary [X] Other SONIC

(4) CONSTRUCTION Piezometer Well [ ]
Depth of Completed Well 183.00 ft. Special Standard [X]



MONUMENT/VAULT Below Ground
From 0 To 2.5

BORE HOLE
Diameter 10 From 0 To 35

CASING
Dia. 2 From [ ] 0 To 172
Gauge sch 40 Wld Thrd
Material [ ] Steel [X] Plastic [ ] [X]

LINER
Dia. From [ ] To
Gauge Wld Thrd
Material [ ] Steel [ ] Plastic [ ] [ ]

SEAL
From 3 To 13
Material Bentonite Chips
Amount 10 Sacks Grout weight

SCREEN
Casing/Liner Casing Material Stainless Steel
Diameter 2 From 172 To 182
Slot Size 0.010

FILTER
From 2.5 To 3 Material PEA GRAVEL Size of pack pea gravel

(5) WELL TESTS

Table with columns: Pump, Bailer, Air, Flowing Artesian, Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr)

Temperature 56 °F Lab analysis [ ] Yes By

Supervising Geologist/Engineer

Water quality concerns? [ ] Yes (describe below)

Table with columns: From, To, Description, Amount, Units

(6) LOCATION OF WELL (legal description)

County MULTNOMAH Twp 1.00 N N/S Range 1.00 W E/W WM
Sec 13 NE 1/4 of the NW 1/4 Tax Lot 1200
Tax Map Number Lot
Lat ' " or DMS or DD
Long ' " or DMS or DD
[ ] Street address of well [X] Nearest address
7200 NW FRONT AVE, PORTLAND OR

(7) STATIC WATER LEVEL

Table with columns: Date, SWL(psi), + SWL(ft)
Existing Well / Predeepening
Completed Well 4/7/2015 28

Table with columns: SWL Date, From, To, Est Flow, SWL(psi), + SWL(ft)
WATER BEARING ZONES
Flowing Artesian? [ ] Dry Hole? [ ]
Depth water was first found

(8) WELL LOG

Table with columns: Material, From, To, Ground Elevation

Date Started 4/7/2015 Completed 4/16/2015

(unbonded) Monitor Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon monitoring well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number 10329 Date 5/11/2015
Password : (if filing electronically)
Signed RODNEY LABROSSE SR (E-filed)

(bonded) Monitor Well Constructor Certification

I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon monitoring well construction standards. This report is true to the best of my knowledge and belief.

License Number 10306 Date 5/12/2015
Password : (if filing electronically)
Signed J TRENT CASTNER (E-filed)
Contact Info (optional) Cascade Drilling



MONITORING WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

MULT 119380

5/12/2015

# Map of Hole



Source: Aerial photograph obtained from Esri ArcGIS Online.

Note: Locations are approximate and shown for reference only.

### Legend

- Geoprobe Location
- ⊕ NW Natural Well
- ⊗ Abandoned Siltronic Monitoring Well
- ◆ TarGOST Boring
- Siltronic Tax Lot

**Figure**  
**Monitoring Well WS-14**  
**and WS-11 Locations**

Siltronic Corporation  
Portland, Oregon

**MAUL FOSTER ALONGI**  
p. 971.544.2139 | www.mfaalongi.com

This project is an informational program and does not have been prepared by or for the use of any engineering, or consulting program. Users of this information should exercise the primary duty and discretion to assess the quality of the information.



# ATTACHMENT F

WELL DEVELOPMENT FIELD FORM





MAUL  
FOSTER  
ALONGI

KRT/ENH

Well Development Form

Project No. 8128.01.08/08	Date Tuesday, 4/28/2015 to Thursday, 4/30/2015
Site Location: Siltronic	Well: WS47-183
Name: WS47-183	Initial DTB: 182.84 Final DTB 183.00
Development Method: Waterma (surge + purge) wind for (purge)	Initial DTW: 26.71 Final DTW 26.05
Total Water Removed	Pore Volume: 25.45 gallons
Water Contained in 5x 275-gallon totes	Casing Diameter: 2"
Estimated Specific Capacity	Meter No.

Time	Cum. Vol Removed	Turbidity NTU	pH	Conductivity (uS/cm)	Temp °C	DO (mg/L)	Elr- <del>net</del> ORP	Comments
10:41	25 gallons	155.6	6.82	489	15.52	0.01	-205.6	2.4 L/min cloudy, tan.
10:58	30 gallons	-	-	-	-	-	-	Pull tubing up ~1 ft. Tubing is now ~1'3" above bottom.
11:24	50 g	173.8	6.85	546	15.05	0.03	-385.9	2.6 L/min cloudy, light gray
11:32	50 g	-	-	-	-	-	-	Pull tubing up ~1 ft. Tubing is now ~2'3" above bottom
12:00	75 g	64.77	6.90	562	15.04	0.01	-366.8	2.6 L/min, WL=27.23 slightly cloudy to cloudy, light gray.
12:07	75 g	-	-	-	-	-	-	Pull tubing up ~1 ft. Disconnect YSI/flow cell. Tubing is now ~3'3" above bottom.
12:31	98 g	-	-	-	-	-	-	Flow rate w/ YSI = 4.8 L/min. Reattach YSI.
12:37	105 g	74.57	6.79	573	14.67	0.11	-166.9 573.0	2.8 L/min with YSI. WL=27.08 slightly cloudy, light gray.
12:42	105 g	-	-	-	-	-	-	Pull tubing up ~1 ft. Disconnect YSI. Tubing is ~4'3" above bottom.
13:01	123 g	-	-	-	-	-	-	Reattach YSI
13:05	125	60.95	6.80	581	14.57	0.06	-142.1	2.8 L/min with YSI. WL=26.43 slightly cloudy, light gray.
13:09	125	-	-	-	-	-	-	Pull tubing up ~1 ft. Disconnect YSI. Tubing is ~5'3" above bottom.
13:30	149 g	-	-	-	-	-	-	Reattach YSI
13:38	155 g	24.43	6.79	587	14.40	0.09	-147.5	2.8 L/min w/ YSI. WL=26.75 slightly cloudy, clear, light gray - colorless
13:43	155 g	-	-	-	-	-	-	Pull tubing up ~1 ft. Disconnect YSI. Tubing is ~6'3" above bottom.
14:05	176 g	-	-	-	-	-	-	Reattach YSI. Flow rate w/ YSI = 3.2 L/min.
14:14	178 g	13.18	6.80	592	14.34	0.13	-121.8	2.7 L/min w/ YSI. WL=26.60
14:16	178 g	-	-	-	-	-	-	Pull tubing up ~1 ft. Disconnect YSI. Tubing is ~7'3" above bottom.
14:36	198 g	-	-	-	-	-	-	Flow rate w/ YSI = 4.2 L/min. Reattach YSI
14:40	200 g	9.61	6.86	596	14.24	0.02	-127.0	2.6 L/min w/ YSI DTW=26.50 clear + colorless

Notes:  
 Initial DTW + DTB measured using dedicated Siltronic Geotech interface probe.  
~~NAPL was not measured~~ The interface probe did not sound to indicate the presence of NAPL and NAPL was not observed on the interface probe following DTW + DTB measurements.  
 water levels during development measured using PDX WL #2  
 0939 Begin purging.  
 Surge/purge fieldforms \Well Development.XLS Sheet1  
 using 3/8" Waterma tubing, foot valve, & surge block for 2" well.  
 Initial water quality = cloudy, dark





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FOSTER  
ALONGI

KRT/ENH

Well Development Form

Project No. 8128-01.08/08	Date Wednesday, April 27 <sup>th</sup> 2015
Site Location: Silttron	Well: WS47-183
Name: WS47-183	Initial DTB: Final DTB
Development Method:	Initial DTW: Final DTW
Total Water Removed	Pore Volume:
Water Contained	Casing Diameter:
Estimated Specific Capacity	Meter No.

Time	Cum. Vol Removed	Turbidity NTU	pH	Conductivity (uS/cm)	Temp °C	DO (mg/L)	-Eh ORP EMV	Comments
08:21	265g	-	-	-	-	-	-	Begin pumping using waterline. Inlet ~3" above bottom.
8:54	290g	5.60	6.52	608	15.18	0.03	-	Attach YSI
9:04	295	5.60	6.55	609	15.21	0.06	-113.5	1.95 L/min w/ YSI on. Clear & colorless. WL=27.11
9:08	295	-	-	-	-	-	-	Pull tubing up ~1 ft. Disconnect YSI. Tubing is ~1.3" above bottom.
9:34	310	-	-	-	-	-	-	Flow rate w/ YSI = 3.2 L/min. Attach YSI.
9:47	315	5.74	6.68	609	15.06	0.03	-131.2	2.2 L/min DTW=27.28 (clear and colorless)
9:54	315	-	-	-	-	-	-	Pull tubing up ~10 feet. Disconnect YSI.
10:18	335	-	-	-	-	-	-	Tubing is ~11'0" above bottom. Reattach YSI.
10:28	340	3.50	6.70	614	15.13	0.06	-134.0	2.1 L/min. DTW=27.49 (clear & colorless).
11:24	365	4.42	6.83	621	15.39	0.03	-137.2	Tubing is still @ 11:0' above bottom. 2.0 L/min. WL=27.68 (clear & colorless)
12:30	365	-	-	-	-	-	-	DTW=27.96
14:30	465	-	-	-	-	-	-	Begin granitex purge @ 140' bgs. Rest of granitex @ pipe. 3 gal/min. 390 Hz.
14:40	490	-	-	-	-	-	-	lowered granitex to 158 Hz.
14:49	495	5.27	6.87	623	15.36	0.09	-161.2	2.4 L/min. DTW=27.12 (clear & colorless)
14:52	497	-	-	-	-	-	-	Increase granitex to 391 Hz. 3 gal/min.
15:06	540	-	-	-	-	-	-	Switch tubing to new tote continue to pump @ 391 Hz.
15:30	610	-	-	-	-	-	-	Decrease granitex to 153 Hz. Reattach YSI.
15:40	615	2.91	6.81	629	15.73	0.10	-118.4	2.0 L/min. DTW=27.04 (clear & colorless)

W, 4/22/15 @ 07:47, DTW=26.83 + DTB=182.99 using Silttron-dedicated Geotech interface probe. No product detected/observed.



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FOSTER  
ALONGI

ICRT/ENH

Well Development Form

Project No. 8128.01.08/08	Date Wednesday, April 29th, 2015
Site Location: Siltomic	Well: WS47-183
Name: WS47-183	Initial DTB: Final DTB
Development Method:	Initial DTW: Final DTW
Total Water Removed	Pore Volume:
Water Contained	Casing Diameter:
Estimated Specific Capacity	Meter No.

Time	Cum. Vol Removed	Turbidity NTU	pH	Conductivity (uS/cm)	Temp °C	DO (mg/L)	Eh	Comments
15:42	617	-	-	-	-	-	-	Increase grout/as to 394 Hz. Remove YSI
16:09	710	-	-	-	-	-	-	Decrease grout/as to 155 Hz. Reattach YSI.
16:15	715	2.38	6.84	635	15.64	0.03	-121.3	2.1 L/min. Clear & colorless. DTW=26.84
16:18	717	-	-	-	-	-	-	Increase grout/as to 394 Hz. Remove YSI.
16:48	813	-	-	-	-	-	-	Decrease grout/as to 155 Hz. Reattach YSI.
16:52	815	3.60	6.83	638	15.76	0.02	-117.2	1.9 L/min. Clear & colorless. WL=26.88
17:00	820	-	-	-	-	-	-	Increase grout/as to 395 Hz. Remove YSI. Move tubing to new hole ⑨
17:22	893	-	-	-	-	-	-	Decrease grout/as to 155 Hz. Reattach YSI.
17:27	895	2.84	6.85	641	15.69	0.07	-119.0	2.1 L/min. Clear & colorless. WL=26.94
17:29	897	-	-	-	-	-	-	Increase grout/as to 397 Hz. Remove YSI.
17:58	997	-	-	-	-	-	-	Decrease grout/as to 155 Hz. Reattach YSI.
18:04	1000	3.27	6.84	642	15.57	0.08	-115.3	2.0 L/min. Clear & colorless. WL=27.21
18:06	1002	-	-	-	-	-	-	Increase grout/as to 397 Hz. Remove YSI.
18:22	1055	-	-	-	-	-	-	Shut-off grout/as. WL=27.12
END OF DAY								



MAUL  
FOSTER  
ALONGI

Well Development Form

DTB 183.4 bgs

KRT

Project No. 8128-01-08/08	Date Thursday, Apr. 1 30th, 2015
Site Location: S. Mronic	Well: WS47-183
Name: WS47-183	Initial DTB: Final DTB 183.00 from TOC } m. 5/4/15 @ 11:29 using Geotech with probe
Development Method: Witema (surge + purge) Grundfos (purge)	Initial DTW: Final DTW 26.05
Total Water Removed 1,380 gallons	Pore Volume:
Water Contained 5 x 275-gallon totes	Casing Diameter:
Estimated Specific Capacity	Meter No.

gallons on side of tote

Tubing Grundfos inlet @ 140'

1st reading took a while to stabilize

60

160

170

220

230

255

280

Time	Cum. Vol Removed	Turbidity NTU	pH	Conductivity (uS/cm)	Temp °C	DO (mg/L)	Eh	Comments
08:20	1,055	—	—	—	—	—	—	Start Grundfos. Decrease to 360 Hz.
08:40	1,100	—	—	—	—	—	—	TOTE 9 Full. SWITCH TO TOTE 10.
08:53	1,145	—	—	—	—	—	—	Decrease Grundfos to 155 Hz. Reattach YSI.
09:00	1,150	0.25	6.73	635	15.26	0.14	-103.4	DTW = 27.18 2 L/min <del>at still dropping</del>
09:30	1,160	0.91	6.73	638	15.26	0.06	-103.4	DTW = 27.41 2 L/min Clear + colorless.
09:34	—	—	—	—	—	—	—	Detach YSI.
10:06	1,260	—	—	—	—	—	—	Increase Grundfos to 373 Hz. Decrease Grundfos to 150 Hz. Reattach YSI.
10:27	1,270	0.83	6.78	639	15.42	0.06	-109.1	DTW = 27.72 2 L/min Clear + colorless.
10:32	—	—	—	—	—	—	—	Detach YSI.
10:48	1,320	—	—	—	—	—	—	Increase Grundfos to 357 Hz. Decrease Grundfos to 153 Hz. Reattach YSI.
11:08	1,330	0.79	6.84	642	15.46	0.04	-108.1	DTW = 27.74 1.96 L/min Clear + colorless.
11:55	1,355	0.98	6.85	643	15.55	0.05	-111.5	DTW = 28.14 2 L/min Clear + colorless.
12:41	1,380	1.28	6.84	644	15.62	0.05	-115.3	DTW = 28.28 Clear + colorless.

Notes:

Collected sample TOTES - comp - W on R. 4/30/15 at WS47-183 well development from 5 development water totes, 4 return water totes, & 1 decon water tote using a new/single-use bailer, WS47-183 well install

Sample is a composite from all 10 totes.

# ATTACHMENT G

WASTE CHARACTERIZATION  
LABORATORY ANALYTICAL REPORTS





# Specialty Analytical

11711 SE Capps Road, Ste B  
Clackamas, Oregon 97015  
TEL: 503-607-1331 FAX: 503-607-1336  
Website: [www.specialtyanalytical.com](http://www.specialtyanalytical.com)

---

April 29, 2015

James Peale  
Maul Foster & Alongi  
400 E. Mill Plain Blvd.  
Suite 400  
Vancouver, WA 98660  
TEL: (360) 694-2691  
FAX: (360) 906-1958  
RE: Siltronic IDW / 8128.01.08/08

Dear James Peale:

Order No.: 1504159

Specialty Analytical received 3 sample(s) on 4/17/2015 for the analyses presented in the following report.

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications, except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Marty French". The signature is cursive and somewhat stylized.

Marty French  
Lab Director

## Case Narrative

WO#: 1504159

Date: 4/29/2015

### Specialty Analytical

---

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

---

Client Sample ID "DRUMS-SO-10-35" contains an Aroclor most closely identified as Aroclor 1254, but has some discrepancies in the elution pattern. The sample was quantified against an Aroclor 1254 standard. EPA 1668 or similar method may be utilized to further quantify the Total PCB concentration.

# Specialty Analytical

Date Reported: 29-Apr-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08  
**Lab ID:** 1504159-001  
**Client Sample ID:** DRUMS-AK-SO-0-10

**Collection Date:** 4/16/2015 8:30:00 AM

**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>NWTPH-DX</b>		<b>NWTPH-DX</b>		Analyst: <b>JRC</b>		
Diesel	ND	16.3		mg/Kg-dry	1	4/23/2015 8:36:00 AM
Lube Oil	ND	54.2		mg/Kg-dry	1	4/23/2015 8:36:00 AM
Surr: o-Terphenyl	86.9	50-150		%REC	1	4/23/2015 8:36:00 AM
<b>NWTPH-GX</b>		<b>NWTPH-GX</b>		Analyst: <b>BS</b>		
Gasoline	ND	2.71		mg/Kg-dry	1	4/24/2015 1:08:38 AM
Surr: 4-Bromofluorobenzene	80.2	50-150		%REC	1	4/24/2015 1:08:38 AM
<b>TCLP 8 ICP/MS METALS-TCLP LEACHED</b>		<b>E1311/6020</b>		Analyst: <b>KP</b>		
Arsenic, TCLP	ND	5.00		µg/L	1	4/21/2015 6:04:00 PM
Barium, TCLP	284	50.0		µg/L	1	4/21/2015 6:04:00 PM
Cadmium, TCLP	ND	5.00		µg/L	1	4/21/2015 6:04:00 PM
Chromium, TCLP	10.0	5.00		µg/L	1	4/21/2015 6:04:00 PM
Lead, TCLP	38.3	5.00		µg/L	1	4/21/2015 6:04:00 PM
Selenium, TCLP	ND	50.0		µg/L	1	4/21/2015 6:04:00 PM
Silver, TCLP	ND	5.00		µg/L	1	4/21/2015 6:04:00 PM
<b>TCLP 8 TOTAL MERCURY</b>		<b>E7470A</b>		Analyst: <b>BW</b>		
Mercury, TCLP	ND	0.000100		mg/L	1	4/22/2015 9:17:58 AM
<b>SEMIVOLATILE ORGANICS-LOW LEVEL</b>		<b>SW8270D</b>		Analyst: <b>bda</b>		
1,2,4-Trichlorobenzene	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
1,2-Dichlorobenzene	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
1,2-Diphenylhydrazine	ND	167		µg/Kg	1	4/22/2015 11:11:00 AM
1,3-Dichlorobenzene	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
1,4-Dichlorobenzene	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
1-Methylnaphthalene	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
2,4,5-Trichlorophenol	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
2,4,6-Trichlorophenol	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
2,4-Dichlorophenol	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
2,4-Dimethylphenol	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
2,4-Dinitrophenol	ND	333		µg/Kg	1	4/22/2015 11:11:00 AM
2,4-Dinitrotoluene	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
2,6-Dinitrotoluene	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
2-Chloronaphthalene	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
2-Chlorophenol	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
2-Methylnaphthalene	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
2-Methylphenol	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
2-Nitroaniline	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM

# Specialty Analytical

Date Reported: 29-Apr-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08  
**Lab ID:** 1504159-001  
**Client Sample ID:** DRUMS-AK-SO-0-10

**Collection Date:** 4/16/2015 8:30:00 AM

**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>SEMIVOLATILE ORGANICS-LOW LEVEL</b>		<b>SW8270D</b>				Analyst: <b>bda</b>
2-Nitrophenol	ND	167		µg/Kg	1	4/22/2015 11:11:00 AM
3-&4-Methylphenol	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
3,3-Dichlorobenzidine	ND	167		µg/Kg	1	4/22/2015 11:11:00 AM
3-Nitroaniline	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
4,6-Dinitro-2-methylphenol	ND	167		µg/Kg	1	4/22/2015 11:11:00 AM
4-Bromophenyl phenyl ether	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
4-Chloro-3-methylphenol	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
4-Chloroaniline	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
4-Chlorophenyl phenyl ether	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
4-Nitroaniline	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
4-Nitrophenol	ND	167		µg/Kg	1	4/22/2015 11:11:00 AM
Acenaphthene	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Acenaphthylene	132	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Aniline	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Anthracene	48.3	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Benz(a)anthracene	167	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Benzidine	ND	167		µg/Kg	1	4/22/2015 11:11:00 AM
Benzo(a)pyrene	584	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Benzo(b)fluoranthene	525	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Benzo(g,h,i)perylene	820	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Benzo(k)fluoranthene	173	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Benzoic Acid	ND	667		µg/Kg	1	4/22/2015 11:11:00 AM
Benzyl Alcohol	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Benzyl butyl phthalate	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Bis(2-chloroethoxy)methane	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Bis(2-chloroethyl)ether	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Bis(2-chloroisopropyl)ether	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Bis(2-ethylhexyl)phthalate	1080	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Carbazole	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Chrysene	183	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Dibenz(a,h)anthracene	151	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Dibenzofuran	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Diethyl phthalate	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Dimethyl phthalate	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Di-n-butyl phthalate	ND	50.0		µg/Kg	1	4/22/2015 11:11:00 AM
Di-n-octyl phthalate	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Fluoranthene	221	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Fluorene	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Hexachlorobenzene	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM

# Specialty Analytical

Date Reported: 29-Apr-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08  
**Lab ID:** 1504159-001  
**Client Sample ID:** DRUMS-AK-SO-0-10

**Collection Date:** 4/16/2015 8:30:00 AM

**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>SEMIVOLATILE ORGANICS-LOW LEVEL</b>		<b>SW8270D</b>		Analyst: <b>bda</b>		
Hexachlorobutadiene	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Hexachlorocyclopentadiene	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Hexachloroethane	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Indeno(1,2,3-cd)pyrene	587	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Isophorone	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Naphthalene	78.7	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Nitrobenzene	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
N-Nitrosodimethylamine	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
N-Nitrosodi-n-propylamine	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
N-Nitrosodiphenylamine	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Pentachlorophenol	ND	50.0		µg/Kg	1	4/22/2015 11:11:00 AM
Phenanthrene	42.7	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Phenol	ND	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Pyrene	328	33.3		µg/Kg	1	4/22/2015 11:11:00 AM
Pyridine	ND	167		µg/Kg	1	4/22/2015 11:11:00 AM
Surr: 2,4,6-Tribromophenol	51.1	57.8-119	SMI	%REC	1	4/22/2015 11:11:00 AM
Surr: 2-Fluorobiphenyl	79.8	52.6-93.2		%REC	1	4/22/2015 11:11:00 AM
Surr: 2-Fluorophenol	64.4	40.7-111		%REC	1	4/22/2015 11:11:00 AM
Surr: 4-Terphenyl-d14	63.7	49.8-118		%REC	1	4/22/2015 11:11:00 AM
Surr: Nitrobenzene-d5	76.9	44.8-103		%REC	1	4/22/2015 11:11:00 AM
Surr: Phenol-d6	65.5	47.5-117		%REC	1	4/22/2015 11:11:00 AM
<b>VOLATILE ORGANICS BY GC/MS</b>		<b>SW8260B</b>		Analyst: <b>CK</b>		
1,1,1,2-Tetrachloroethane	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
1,1,1-Trichloroethane	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
1,1,2,2-Tetrachloroethane	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
1,1,2-Trichloroethane	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
1,1-Dichloroethane	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
1,1-Dichloroethene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
1,1-Dichloropropene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
1,2,3-Trichlorobenzene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
1,2,3-Trichloropropane	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
1,2,4-Trichlorobenzene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
1,2,4-Trimethylbenzene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
1,2-Dibromo-3-chloropropane	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
1,2-Dibromoethane	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
1,2-Dichlorobenzene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
1,2-Dichloroethane	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM

# Specialty Analytical

Date Reported: 29-Apr-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08  
**Lab ID:** 1504159-001  
**Client Sample ID:** DRUMS-AK-SO-0-10

**Collection Date:** 4/16/2015 8:30:00 AM

**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>VOLATILE ORGANICS BY GC/MS</b>		<b>SW8260B</b>				Analyst: <b>CK</b>
1,2-Dichloropropane	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
1,3,5-Trimethylbenzene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
1,3-Dichlorobenzene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
1,3-Dichloropropane	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
1,4-Dichlorobenzene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
2,2-Dichloropropane	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
2-Butanone	ND	20.0		µg/Kg	1	4/20/2015 4:40:00 PM
2-Chlorotoluene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
2-Hexanone	ND	20.0		µg/Kg	1	4/20/2015 4:40:00 PM
4-Chlorotoluene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
4-Isopropyltoluene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
4-Methyl-2-pentanone	ND	20.0		µg/Kg	1	4/20/2015 4:40:00 PM
Acetone	ND	50.0		µg/Kg	1	4/20/2015 4:40:00 PM
Benzene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Bromobenzene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Bromochloromethane	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Bromodichloromethane	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Bromoform	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Bromomethane	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Carbon disulfide	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Carbon tetrachloride	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Chlorobenzene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Chloroethane	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Chloroform	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Chloromethane	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
cis-1,2-Dichloroethene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
cis-1,3-Dichloropropene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Dibromochloromethane	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Dibromomethane	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Dichlorodifluoromethane	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Ethylbenzene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Hexachlorobutadiene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Isopropylbenzene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
m,p-Xylene	ND	20.0		µg/Kg	1	4/20/2015 4:40:00 PM
Methyl tert-butyl ether	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Methylene chloride	ND	50.0		µg/Kg	1	4/20/2015 4:40:00 PM
Naphthalene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
n-Butylbenzene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
n-Propylbenzene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM

# Specialty Analytical

Date Reported: 29-Apr-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08  
**Lab ID:** 1504159-001  
**Client Sample ID:** DRUMS-AK-SO-0-10

**Collection Date:** 4/16/2015 8:30:00 AM

**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>VOLATILE ORGANICS BY GC/MS</b>		<b>SW8260B</b>				Analyst: <b>CK</b>
o-Xylene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
sec-Butylbenzene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Styrene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
tert-Butylbenzene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Tetrachloroethene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Toluene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
trans-1,2-Dichloroethene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
trans-1,3-Dichloropropene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Trichloroethene	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Trichlorofluoromethane	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Vinyl chloride	ND	10.0		µg/Kg	1	4/20/2015 4:40:00 PM
Surr: 1,2-Dichloroethane-d4	111	71.5-112		%REC	1	4/20/2015 4:40:00 PM
Surr: 4-Bromofluorobenzene	101	75.7-122		%REC	1	4/20/2015 4:40:00 PM
Surr: Dibromofluoromethane	116	64.3-124		%REC	1	4/20/2015 4:40:00 PM
Surr: Toluene-d8	115	74.9-120		%REC	1	4/20/2015 4:40:00 PM
<b>PCB'S IN SOLIDS</b>		<b>SW 8082A</b>				Analyst: <b>ajr</b>
Aroclor 1016	ND	0.333		µg/Kg	1	4/23/2015 2:50:00 PM
Aroclor 1221	ND	0.333		µg/Kg	1	4/23/2015 2:50:00 PM
Aroclor 1232	ND	0.333		µg/Kg	1	4/23/2015 2:50:00 PM
Aroclor 1242	ND	0.333		µg/Kg	1	4/23/2015 2:50:00 PM
Aroclor 1248	ND	0.333		µg/Kg	1	4/23/2015 2:50:00 PM
Aroclor 1254	ND	0.333		µg/Kg	1	4/23/2015 2:50:00 PM
Aroclor 1260	ND	0.333		µg/Kg	1	4/23/2015 2:50:00 PM
Aroclor 1262	ND	0.333		µg/Kg	1	4/23/2015 2:50:00 PM
Aroclor 1268	ND	0.333		µg/Kg	1	4/23/2015 2:50:00 PM
Surr: Decachlorobiphenyl	126	56.5-130		%REC	1	4/23/2015 2:50:00 PM
<b>CYANIDE</b>		<b>SW9012B</b>				Analyst: <b>EFH</b>
Cyanide, Total	0.529	0.200		mg/Kg	1	4/21/2015 2:43:21 PM

# Specialty Analytical

Date Reported: 29-Apr-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08  
**Lab ID:** 1504159-002  
**Client Sample ID:** DRUMS-SO-10-35

**Collection Date:** 4/16/2015 9:30:00 AM

**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>NWTPH-DX</b>		<b>NWTPH-DX</b>		Analyst: <b>JRC</b>		
Diesel	398	18.6	A1	mg/Kg-dry	1	4/23/2015 8:57:00 AM
Lube Oil	240	62.0	A2	mg/Kg-dry	1	4/23/2015 8:57:00 AM
Surr: o-Terphenyl	112	50-150		%REC	1	4/23/2015 8:57:00 AM
<b>NWTPH-GX</b>		<b>NWTPH-GX</b>		Analyst: <b>BS</b>		
Gasoline	446	3.10		mg/Kg-dry	1	4/24/2015 10:00:38 AM
Surr: 4-Bromofluorobenzene	90.4	50-150		%REC	1	4/24/2015 10:00:38 AM
<b>TCLP 8 ICP/MS METALS-TCLP LEACHED</b>		<b>E1311/6020</b>		Analyst: <b>KP</b>		
Arsenic, TCLP	6.05	5.00		µg/L	1	4/21/2015 6:12:00 PM
Barium, TCLP	433	50.0		µg/L	1	4/21/2015 6:12:00 PM
Cadmium, TCLP	ND	5.00		µg/L	1	4/21/2015 6:12:00 PM
Chromium, TCLP	15.0	5.00		µg/L	1	4/21/2015 6:12:00 PM
Lead, TCLP	29.2	5.00		µg/L	1	4/21/2015 6:12:00 PM
Selenium, TCLP	ND	50.0		µg/L	1	4/21/2015 6:12:00 PM
Silver, TCLP	ND	5.00		µg/L	1	4/21/2015 6:12:00 PM
<b>TCLP 8 TOTAL MERCURY</b>		<b>E7470A</b>		Analyst: <b>BW</b>		
Mercury, TCLP	ND	0.000100		mg/L	1	4/22/2015 9:19:58 AM
<b>SEMIVOLATILE ORGANICS-LOW LEVEL</b>		<b>SW8270D</b>		Analyst: <b>bda</b>		
1,2,4-Trichlorobenzene	ND	133	Q	µg/Kg	4	4/22/2015 1:36:00 PM
1,2-Dichlorobenzene	ND	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
1,2-Diphenylhydrazine	ND	167		µg/Kg	1	4/22/2015 10:42:00 AM
1,3-Dichlorobenzene	ND	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
1,4-Dichlorobenzene	ND	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
1-Methylnaphthalene	5670	133		µg/Kg	4	4/22/2015 1:36:00 PM
2,4,5-Trichlorophenol	ND	133	Q	µg/Kg	4	4/22/2015 1:36:00 PM
2,4,6-Trichlorophenol	ND	133	Q	µg/Kg	4	4/22/2015 1:36:00 PM
2,4-Dichlorophenol	ND	133	Q	µg/Kg	4	4/22/2015 1:36:00 PM
2,4-Dimethylphenol	ND	133	Q	µg/Kg	4	4/22/2015 1:36:00 PM
2,4-Dinitrophenol	ND	1330	Q	µg/Kg	4	4/22/2015 1:36:00 PM
2,4-Dinitrotoluene	ND	133	Q	µg/Kg	4	4/22/2015 1:36:00 PM
2,6-Dinitrotoluene	ND	133	Q	µg/Kg	4	4/22/2015 1:36:00 PM
2-Chloronaphthalene	ND	133	Q	µg/Kg	4	4/22/2015 1:36:00 PM
2-Chlorophenol	ND	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
2-Methylnaphthalene	10100	133		µg/Kg	4	4/22/2015 1:36:00 PM
2-Methylphenol	ND	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
2-Nitroaniline	ND	133	Q	µg/Kg	4	4/22/2015 1:36:00 PM

# Specialty Analytical

Date Reported: 29-Apr-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08  
**Lab ID:** 1504159-002  
**Client Sample ID:** DRUMS-SO-10-35

**Collection Date:** 4/16/2015 9:30:00 AM

**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>SEMIVOLATILE ORGANICS-LOW LEVEL</b>		<b>SW8270D</b>				Analyst: <b>bda</b>
2-Nitrophenol	ND	668	Q	µg/Kg	4	4/22/2015 1:36:00 PM
3-&4-Methylphenol	ND	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
3,3-Dichlorobenzidine	ND	167		µg/Kg	1	4/22/2015 10:42:00 AM
3-Nitroaniline	ND	133	Q	µg/Kg	4	4/22/2015 1:36:00 PM
4,6-Dinitro-2-methylphenol	ND	668	Q	µg/Kg	4	4/22/2015 1:36:00 PM
4-Bromophenyl phenyl ether	ND	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
4-Chloro-3-methylphenol	ND	133	Q	µg/Kg	4	4/22/2015 1:36:00 PM
4-Chloroaniline	ND	133	Q	µg/Kg	4	4/22/2015 1:36:00 PM
4-Chlorophenyl phenyl ether	ND	133	Q	µg/Kg	4	4/22/2015 1:36:00 PM
4-Nitroaniline	ND	133	Q	µg/Kg	4	4/22/2015 1:36:00 PM
4-Nitrophenol	ND	668	Q	µg/Kg	4	4/22/2015 1:36:00 PM
Acenaphthene	5280	333		µg/Kg	10	4/22/2015 2:05:00 PM
Acenaphthylene	255	133		µg/Kg	4	4/22/2015 1:36:00 PM
Aniline	ND	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
Anthracene	4750	133		µg/Kg	4	4/22/2015 1:36:00 PM
Benz(a)anthracene	4010	133		µg/Kg	4	4/22/2015 1:36:00 PM
Benzidine	ND	167		µg/Kg	1	4/22/2015 10:42:00 AM
Benzo(a)pyrene	5320	133		µg/Kg	4	4/22/2015 1:36:00 PM
Benzo(b)fluoranthene	2540	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
Benzo(g,h,i)perylene	4450	133		µg/Kg	4	4/22/2015 1:36:00 PM
Benzo(k)fluoranthene	1830	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
Benzoic Acid	ND	2670	Q	µg/Kg	4	4/22/2015 1:36:00 PM
Benzyl Alcohol	ND	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
Benzyl butyl phthalate	ND	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
Bis(2-chloroethoxy)methane	ND	133	Q	µg/Kg	4	4/22/2015 1:36:00 PM
Bis(2-chloroethyl)ether	ND	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
Bis(2-chloroisopropyl)ether	ND	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
Bis(2-ethylhexyl)phthalate	44.7	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
Carbazole	2090	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
Chrysene	3070	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
Dibenz(a,h)anthracene	720	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
Dibenzofuran	744	133		µg/Kg	4	4/22/2015 1:36:00 PM
Diethyl phthalate	ND	133	Q	µg/Kg	4	4/22/2015 1:36:00 PM
Dimethyl phthalate	ND	133	Q	µg/Kg	4	4/22/2015 1:36:00 PM
Di-n-butyl phthalate	ND	50.0		µg/Kg	1	4/22/2015 10:42:00 AM
Di-n-octyl phthalate	ND	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
Fluoranthene	6540	333		µg/Kg	10	4/22/2015 2:05:00 PM
Fluorene	7010	133		µg/Kg	4	4/22/2015 1:36:00 PM
Hexachlorobenzene	ND	33.3		µg/Kg	1	4/22/2015 10:42:00 AM

# Specialty Analytical

Date Reported: 29-Apr-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08  
**Lab ID:** 1504159-002  
**Client Sample ID:** DRUMS-SO-10-35

**Collection Date:** 4/16/2015 9:30:00 AM

**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>SEMIVOLATILE ORGANICS-LOW LEVEL</b>		<b>SW8270D</b>		Analyst: <b>bda</b>		
Hexachlorobutadiene	ND	133	Q	µg/Kg	4	4/22/2015 1:36:00 PM
Hexachlorocyclopentadiene	ND	133	Q	µg/Kg	4	4/22/2015 1:36:00 PM
Hexachloroethane	ND	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
Indeno(1,2,3-cd)pyrene	2670	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
Isophorone	ND	133	Q	µg/Kg	4	4/22/2015 1:36:00 PM
Naphthalene	8520	333		µg/Kg	10	4/22/2015 2:05:00 PM
Nitrobenzene	ND	133	Q	µg/Kg	4	4/22/2015 1:36:00 PM
N-Nitrosodimethylamine	ND	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
N-Nitrosodi-n-propylamine	ND	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
N-Nitrosodiphenylamine	ND	133	Q	µg/Kg	4	4/22/2015 1:36:00 PM
Pentachlorophenol	ND	50.0		µg/Kg	1	4/22/2015 10:42:00 AM
Phenanthrene	13500	333		µg/Kg	10	4/22/2015 2:05:00 PM
Phenol	ND	33.3		µg/Kg	1	4/22/2015 10:42:00 AM
Pyrene	6470	333		µg/Kg	10	4/22/2015 2:05:00 PM
Pyridine	ND	167		µg/Kg	1	4/22/2015 10:42:00 AM
Surr: 2,4,6-Tribromophenol	30.2	57.8-119	SMI	%REC	4	4/22/2015 1:36:00 PM
Surr: 2-Fluorobiphenyl	35.0	52.6-93.2	SMI	%REC	4	4/22/2015 1:36:00 PM
Surr: 2-Fluorophenol	36.4	40.7-111	SMI	%REC	1	4/22/2015 10:42:00 AM
Surr: 4-Terphenyl-d14	14.2	49.8-118	SMI	%REC	1	4/22/2015 10:42:00 AM
Surr: Nitrobenzene-d5	30.5	44.8-103	SMI	%REC	4	4/22/2015 1:36:00 PM
Surr: Phenol-d6	38.5	47.5-117	SMI	%REC	1	4/22/2015 10:42:00 AM
<b>VOLATILE ORGANICS BY GC/MS</b>		<b>SW8260B</b>		Analyst: <b>CK</b>		
1,1,1,2-Tetrachloroethane	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
1,1,1-Trichloroethane	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
1,1,2,2-Tetrachloroethane	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
1,1,2-Trichloroethane	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
1,1-Dichloroethane	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
1,1-Dichloroethene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
1,1-Dichloropropene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
1,2,3-Trichlorobenzene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
1,2,3-Trichloropropane	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
1,2,4-Trichlorobenzene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
1,2,4-Trimethylbenzene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
1,2-Dibromo-3-chloropropane	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
1,2-Dibromoethane	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
1,2-Dichlorobenzene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
1,2-Dichloroethane	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM

# Specialty Analytical

Date Reported: 29-Apr-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08  
**Lab ID:** 1504159-002  
**Client Sample ID:** DRUMS-SO-10-35

**Collection Date:** 4/16/2015 9:30:00 AM

**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>VOLATILE ORGANICS BY GC/MS</b>		<b>SW8260B</b>				Analyst: <b>CK</b>
1,2-Dichloropropane	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
1,3,5-Trimethylbenzene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
1,3-Dichlorobenzene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
1,3-Dichloropropane	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
1,4-Dichlorobenzene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
2,2-Dichloropropane	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
2-Butanone	ND	20.0		µg/Kg	1	4/20/2015 6:18:00 PM
2-Chlorotoluene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
2-Hexanone	ND	20.0		µg/Kg	1	4/20/2015 6:18:00 PM
4-Chlorotoluene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
4-Isopropyltoluene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
4-Methyl-2-pentanone	ND	20.0		µg/Kg	1	4/20/2015 6:18:00 PM
Acetone	ND	50.0		µg/Kg	1	4/20/2015 6:18:00 PM
Benzene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Bromobenzene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Bromochloromethane	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Bromodichloromethane	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Bromoform	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Bromomethane	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Carbon disulfide	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Carbon tetrachloride	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Chlorobenzene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Chloroethane	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Chloroform	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Chloromethane	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
cis-1,2-Dichloroethene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
cis-1,3-Dichloropropene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Dibromochloromethane	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Dibromomethane	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Dichlorodifluoromethane	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Ethylbenzene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Hexachlorobutadiene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Isopropylbenzene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
m,p-Xylene	ND	20.0		µg/Kg	1	4/20/2015 6:18:00 PM
Methyl tert-butyl ether	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Methylene chloride	ND	50.0		µg/Kg	1	4/20/2015 6:18:00 PM
Naphthalene	52.9	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
n-Butylbenzene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
n-Propylbenzene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM

# Specialty Analytical

Date Reported: 29-Apr-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08  
**Lab ID:** 1504159-002  
**Client Sample ID:** DRUMS-SO-10-35

**Collection Date:** 4/16/2015 9:30:00 AM

**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>VOLATILE ORGANICS BY GC/MS</b>		<b>SW8260B</b>		Analyst: <b>CK</b>		
o-Xylene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
sec-Butylbenzene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Styrene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
tert-Butylbenzene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Tetrachloroethene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Toluene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
trans-1,2-Dichloroethene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
trans-1,3-Dichloropropene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Trichloroethene	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Trichlorofluoromethane	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Vinyl chloride	ND	10.0		µg/Kg	1	4/20/2015 6:18:00 PM
Surr: 1,2-Dichloroethane-d4	116	71.5-122		%REC	1	4/20/2015 6:18:00 PM
Surr: 4-Bromofluorobenzene	109	75.7-122		%REC	1	4/20/2015 6:18:00 PM
Surr: Dibromofluoromethane	119	64.3-124		%REC	1	4/20/2015 6:18:00 PM
Surr: Toluene-d8	96.8	74.9-120		%REC	1	4/20/2015 6:18:00 PM
<b>PCB'S IN SOLIDS</b>		<b>SW 8082A</b>		Analyst: <b>ajr</b>		
Aroclor 1016	ND	0.333		µg/Kg	1	4/23/2015 3:07:00 PM
Aroclor 1221	ND	0.333		µg/Kg	1	4/23/2015 3:07:00 PM
Aroclor 1232	ND	0.333		µg/Kg	1	4/23/2015 3:07:00 PM
Aroclor 1242	ND	0.333		µg/Kg	1	4/23/2015 3:07:00 PM
Aroclor 1248	ND	0.333		µg/Kg	1	4/23/2015 3:07:00 PM
Aroclor 1254	170	0.333	CN	µg/Kg	1	4/27/2015 2:08:47 PM
Aroclor 1260	ND	0.333		µg/Kg	1	4/23/2015 3:07:00 PM
Aroclor 1262	ND	0.333		µg/Kg	1	4/23/2015 3:07:00 PM
Aroclor 1268	ND	0.333		µg/Kg	1	4/23/2015 3:07:00 PM
Surr: Decachlorobiphenyl	221	56.5-130	SMI	%REC	1	4/23/2015 3:07:00 PM
<b>CYANIDE</b>		<b>SW9012B</b>		Analyst: <b>EFH</b>		
Cyanide, Total	3.11	0.200		mg/Kg	1	4/21/2015 2:49:21 PM

# Specialty Analytical

Date Reported: 29-Apr-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08  
**Lab ID:** 1504159-003  
**Client Sample ID:** DRUMBOX-SO

**Collection Date:** 4/16/2015 2:30:00 PM

**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>NWTPH-DX</b>		<b>NWTPH-DX</b>		Analyst: <b>JRC</b>		
Diesel	125	19.0	A1	mg/Kg-dry	1	4/23/2015 9:19:00 AM
Lube Oil	99.1	63.2	A2	mg/Kg-dry	1	4/23/2015 9:19:00 AM
Surr: o-Terphenyl	123	50-150		%REC	1	4/23/2015 9:19:00 AM
<b>NWTPH-GX</b>		<b>NWTPH-GX</b>		Analyst: <b>BS</b>		
Gasoline	13.7	3.16		mg/Kg-dry	1	4/24/2015 12:05:38 PM
Surr: 4-Bromofluorobenzene	60.5	50-150		%REC	1	4/24/2015 12:05:38 PM
<b>TCLP 8 ICP/MS METALS-TCLP LEACHED</b>		<b>E1311/6020</b>		Analyst: <b>KP</b>		
Arsenic, TCLP	ND	5.00		µg/L	1	4/21/2015 6:19:00 PM
Barium, TCLP	360	50.0		µg/L	1	4/21/2015 6:19:00 PM
Cadmium, TCLP	ND	5.00		µg/L	1	4/21/2015 6:19:00 PM
Chromium, TCLP	11.0	5.00		µg/L	1	4/21/2015 6:19:00 PM
Lead, TCLP	5.40	5.00		µg/L	1	4/21/2015 6:19:00 PM
Selenium, TCLP	ND	50.0		µg/L	1	4/21/2015 6:19:00 PM
Silver, TCLP	ND	5.00		µg/L	1	4/21/2015 6:19:00 PM
<b>TCLP 8 TOTAL MERCURY</b>		<b>E7470A</b>		Analyst: <b>BW</b>		
Mercury, TCLP	ND	0.000100		mg/L	1	4/22/2015 9:27:58 AM
<b>SEMIVOLATILE ORGANICS-LOW LEVEL</b>		<b>SW8270D</b>		Analyst: <b>bda</b>		
1,2,4-Trichlorobenzene	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
1,2-Dichlorobenzene	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
1,2-Diphenylhydrazine	ND	167		µg/Kg	1	4/22/2015 10:13:00 AM
1,3-Dichlorobenzene	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
1,4-Dichlorobenzene	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
1-Methylnaphthalene	795	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
2,4,5-Trichlorophenol	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
2,4,6-Trichlorophenol	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
2,4-Dichlorophenol	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
2,4-Dimethylphenol	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
2,4-Dinitrophenol	ND	333		µg/Kg	1	4/22/2015 10:13:00 AM
2,4-Dinitrotoluene	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
2,6-Dinitrotoluene	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
2-Chloronaphthalene	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
2-Chlorophenol	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
2-Methylnaphthalene	820	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
2-Methylphenol	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
2-Nitroaniline	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM

# Specialty Analytical

Date Reported: 29-Apr-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08  
**Lab ID:** 1504159-003  
**Client Sample ID:** DRUMBOX-SO

**Collection Date:** 4/16/2015 2:30:00 PM

**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>SEMIVOLATILE ORGANICS-LOW LEVEL</b>		<b>SW8270D</b>				Analyst: <b>bda</b>
2-Nitrophenol	ND	167		µg/Kg	1	4/22/2015 10:13:00 AM
3-&4-Methylphenol	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
3,3-Dichlorobenzidine	ND	167		µg/Kg	1	4/22/2015 10:13:00 AM
3-Nitroaniline	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
4,6-Dinitro-2-methylphenol	ND	167		µg/Kg	1	4/22/2015 10:13:00 AM
4-Bromophenyl phenyl ether	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
4-Chloro-3-methylphenol	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
4-Chloroaniline	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
4-Chlorophenyl phenyl ether	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
4-Nitroaniline	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
4-Nitrophenol	ND	167		µg/Kg	1	4/22/2015 10:13:00 AM
Acenaphthene	1510	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Acenaphthylene	67.7	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Aniline	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Anthracene	485	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Benz(a)anthracene	286	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Benzidine	ND	167		µg/Kg	1	4/22/2015 10:13:00 AM
Benzo(a)pyrene	372	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Benzo(b)fluoranthene	355	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Benzo(g,h,i)perylene	305	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Benzo(k)fluoranthene	155	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Benzoic Acid	ND	667		µg/Kg	1	4/22/2015 10:13:00 AM
Benzyl Alcohol	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Benzyl butyl phthalate	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Bis(2-chloroethoxy)methane	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Bis(2-chloroethyl)ether	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Bis(2-chloroisopropyl)ether	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Bis(2-ethylhexyl)phthalate	37.7	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Carbazole	117	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Chrysene	319	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Dibenz(a,h)anthracene	53.7	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Dibenzofuran	96.7	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Diethyl phthalate	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Dimethyl phthalate	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Di-n-butyl phthalate	ND	50.0		µg/Kg	1	4/22/2015 10:13:00 AM
Di-n-octyl phthalate	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Fluoranthene	1140	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Fluorene	709	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Hexachlorobenzene	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM

# Specialty Analytical

Date Reported: 29-Apr-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08  
**Lab ID:** 1504159-003  
**Client Sample ID:** DRUMBOX-SO

**Collection Date:** 4/16/2015 2:30:00 PM

**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>SEMIVOLATILE ORGANICS-LOW LEVEL</b>		<b>SW8270D</b>		Analyst: <b>bda</b>		
Hexachlorobutadiene	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Hexachlorocyclopentadiene	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Hexachloroethane	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Indeno(1,2,3-cd)pyrene	237	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Isophorone	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Naphthalene	811	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Nitrobenzene	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
N-Nitrosodimethylamine	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
N-Nitrosodi-n-propylamine	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
N-Nitrosodiphenylamine	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Pentachlorophenol	ND	50.0		µg/Kg	1	4/22/2015 10:13:00 AM
Phenanthrene	2770	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Phenol	ND	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Pyrene	1200	33.3		µg/Kg	1	4/22/2015 10:13:00 AM
Pyridine	ND	167		µg/Kg	1	4/22/2015 10:13:00 AM
Surr: 2,4,6-Tribromophenol	40.3	57.8-119	SMI	%REC	1	4/22/2015 10:13:00 AM
Surr: 2-Fluorobiphenyl	31.4	52.6-93.2	SMI	%REC	1	4/22/2015 10:13:00 AM
Surr: 2-Fluorophenol	31.6	40.7-111	SMI	%REC	1	4/22/2015 10:13:00 AM
Surr: 4-Terphenyl-d14	50.6	49.8-118		%REC	1	4/22/2015 10:13:00 AM
Surr: Nitrobenzene-d5	23.7	44.8-103	SMI	%REC	1	4/22/2015 10:13:00 AM
Surr: Phenol-d6	34.0	47.5-117	SMI	%REC	1	4/22/2015 10:13:00 AM
<b>VOLATILE ORGANICS BY GC/MS</b>		<b>SW8260B</b>		Analyst: <b>CK</b>		
1,1,1,2-Tetrachloroethane	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
1,1,1-Trichloroethane	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
1,1,2,2-Tetrachloroethane	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
1,1,2-Trichloroethane	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
1,1-Dichloroethane	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
1,1-Dichloroethene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
1,1-Dichloropropene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
1,2,3-Trichlorobenzene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
1,2,3-Trichloropropane	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
1,2,4-Trichlorobenzene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
1,2,4-Trimethylbenzene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
1,2-Dibromo-3-chloropropane	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
1,2-Dibromoethane	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
1,2-Dichlorobenzene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
1,2-Dichloroethane	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM

# Specialty Analytical

Date Reported: 29-Apr-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08  
**Lab ID:** 1504159-003  
**Client Sample ID:** DRUMBOX-SO

**Collection Date:** 4/16/2015 2:30:00 PM

**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>VOLATILE ORGANICS BY GC/MS</b>		<b>SW8260B</b>				Analyst: <b>CK</b>
1,2-Dichloropropane	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
1,3,5-Trimethylbenzene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
1,3-Dichlorobenzene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
1,3-Dichloropropane	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
1,4-Dichlorobenzene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
2,2-Dichloropropane	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
2-Butanone	ND	20.0		µg/Kg	1	4/20/2015 5:45:00 PM
2-Chlorotoluene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
2-Hexanone	ND	20.0		µg/Kg	1	4/20/2015 5:45:00 PM
4-Chlorotoluene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
4-Isopropyltoluene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
4-Methyl-2-pentanone	ND	20.0		µg/Kg	1	4/20/2015 5:45:00 PM
Acetone	ND	50.0		µg/Kg	1	4/20/2015 5:45:00 PM
Benzene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Bromobenzene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Bromochloromethane	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Bromodichloromethane	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Bromoform	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Bromomethane	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Carbon disulfide	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Carbon tetrachloride	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Chlorobenzene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Chloroethane	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Chloroform	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Chloromethane	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
cis-1,2-Dichloroethene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
cis-1,3-Dichloropropene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Dibromochloromethane	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Dibromomethane	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Dichlorodifluoromethane	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Ethylbenzene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Hexachlorobutadiene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Isopropylbenzene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
m,p-Xylene	ND	20.0		µg/Kg	1	4/20/2015 5:45:00 PM
Methyl tert-butyl ether	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Methylene chloride	ND	50.0		µg/Kg	1	4/20/2015 5:45:00 PM
Naphthalene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
n-Butylbenzene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
n-Propylbenzene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM

# Specialty Analytical

Date Reported: 29-Apr-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08  
**Lab ID:** 1504159-003  
**Client Sample ID:** DRUMBOX-SO

**Collection Date:** 4/16/2015 2:30:00 PM

**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>VOLATILE ORGANICS BY GC/MS</b>		<b>SW8260B</b>		Analyst: <b>CK</b>		
o-Xylene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
sec-Butylbenzene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Styrene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
tert-Butylbenzene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Tetrachloroethene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Toluene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
trans-1,2-Dichloroethene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
trans-1,3-Dichloropropene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Trichloroethene	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Trichlorofluoromethane	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Vinyl chloride	ND	10.0		µg/Kg	1	4/20/2015 5:45:00 PM
Surr: 1,2-Dichloroethane-d4	108	71.5-112		%REC	1	4/20/2015 5:45:00 PM
Surr: 4-Bromofluorobenzene	101	75.7-122		%REC	1	4/20/2015 5:45:00 PM
Surr: Dibromofluoromethane	114	64.3-124		%REC	1	4/20/2015 5:45:00 PM
Surr: Toluene-d8	105	74.9-120		%REC	1	4/20/2015 5:45:00 PM
<b>CYANIDE</b>		<b>SW9012B</b>		Analyst: <b>EFH</b>		
Cyanide, Total	ND	0.200		mg/Kg	1	4/21/2015 2:51:21 PM

# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 6020\_TCLP

Sample ID: <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020_TCLP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>19780</b>						
Client ID: <b>ICV</b>	Batch ID: <b>9296</b>	TestNo: <b>E1311/6020</b>	<b>SW3010A</b>	Analysis Date: <b>4/21/2015</b>	SeqNo: <b>264725</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	49.5	0.100	50.00	0	98.9	90	110				
Barium, TCLP	50.6	1.00	50.00	0	101	90	110				
Cadmium, TCLP	50.2	0.100	50.00	0	100	90	110				
Chromium, TCLP	49.1	0.100	50.00	0	98.2	90	110				
Lead, TCLP	48.5	0.100	50.00	0	97.1	90	110				
Silver, TCLP	47.9	0.100	50.00	0	95.8	90	110				

Sample ID: <b>MB-9296</b>	SampType: <b>MBLK</b>	TestCode: <b>6020_TCLP</b>	Units: <b>µg/L</b>	Prep Date: <b>4/21/2015</b>	RunNo: <b>19780</b>						
Client ID: <b>PBW</b>	Batch ID: <b>9296</b>	TestNo: <b>E1311/6020</b>	<b>SW3010A</b>	Analysis Date: <b>4/21/2015</b>	SeqNo: <b>264726</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	ND	0.100									
Barium, TCLP	ND	1.00									
Cadmium, TCLP	ND	0.100									
Chromium, TCLP	ND	0.100									
Lead, TCLP	ND	0.100									
Selenium, TCLP	ND	1.00									
Silver, TCLP	ND	0.100									

Sample ID: <b>LCS-9296</b>	SampType: <b>LCS</b>	TestCode: <b>6020_TCLP</b>	Units: <b>µg/L</b>	Prep Date: <b>4/21/2015</b>	RunNo: <b>19780</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>9296</b>	TestNo: <b>E1311/6020</b>	<b>SW3010A</b>	Analysis Date: <b>4/21/2015</b>	SeqNo: <b>264727</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

**Qualifiers:** B Analyte detected in the associated Method Blank      H Holding times for preparation or analysis exceeded      ND Not Detected at the Reporting Limit      Page 1 of 26  
O RSD is greater than RSDlimit      R RPD outside accepted recovery limits      S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 6020\_TCLP

Sample ID: <b>LCS-9296</b>	SampType: <b>LCS</b>	TestCode: <b>6020_TCLP</b>	Units: <b>µg/L</b>	Prep Date: <b>4/21/2015</b>	RunNo: <b>19780</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>9296</b>	TestNo: <b>E1311/6020</b>	<b>SW3010A</b>	Analysis Date: <b>4/21/2015</b>	SeqNo: <b>264727</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	49.9	0.100	50.00	0	99.9	80	120				
Barium, TCLP	50.4	1.00	50.00	0	101	80	120				
Cadmium, TCLP	50.2	0.100	50.00	0	100	80	120				
Chromium, TCLP	49.7	0.100	50.00	0	99.3	80	120				
Lead, TCLP	48.6	0.100	50.00	0	97.3	80	120				
Selenium, TCLP	50.3	1.00	50.00	0	101	80	120				
Silver, TCLP	48.2	0.100	50.00	0	96.3	80	120				

Sample ID: <b>1504164-001ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>6020_TCLP</b>	Units: <b>µg/L</b>	Prep Date: <b>4/21/2015</b>	RunNo: <b>19780</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>9296</b>	TestNo: <b>E1311/6020</b>	<b>SW3010A</b>	Analysis Date: <b>4/21/2015</b>	SeqNo: <b>264730</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	18.3	5.00						24.08	27.3	20	RF
Barium, TCLP	236	50.0						296.8	22.8	20	R
Cadmium, TCLP	32.4	5.00						41.18	24.0	20	RF
Chromium, TCLP	24.7	5.00						30.38	20.6	20	RF
Lead, TCLP	1230	5.00						1563	23.6	20	R
Selenium, TCLP	ND	50.0						0	0	20	RF
Silver, TCLP	ND	5.00						0	0	20	RF

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank O RSD is greater than RSDlimit	H Holding times for preparation or analysis exceeded R RPD outside accepted recovery limits	ND Not Detected at the Reporting Limit S Spike Recovery outside accepted reco	Page 2 of 26
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# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 6020\_TCLP

Sample ID: <b>1504164-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>6020_TCLP</b>	Units: <b>µg/L</b>	Prep Date: <b>4/21/2015</b>	RunNo: <b>19780</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>9296</b>	TestNo: <b>E1311/6020</b>	<b>SW3010A</b>	Analysis Date: <b>4/21/2015</b>	SeqNo: <b>264731</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	275	5.00	250.0	24.08	100	70	130				
Barium, TCLP	542	50.0	250.0	296.8	98.1	70	130				
Cadmium, TCLP	302	5.00	250.0	41.18	104	70	130				
Chromium, TCLP	270	5.00	250.0	30.38	96.0	70	130				
Lead, TCLP	1640	5.00	250.0	1563	32.6	70	130				SMC
Selenium, TCLP	264	50.0	250.0	10.13	101	70	130				
Silver, TCLP	250	5.00	250.0	0.3136	99.9	70	130				

Sample ID: <b>1504164-001AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_TCLP</b>	Units: <b>µg/L</b>	Prep Date: <b>4/21/2015</b>	RunNo: <b>19780</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>9296</b>	TestNo: <b>E1311/6020</b>	<b>SW3010A</b>	Analysis Date: <b>4/21/2015</b>	SeqNo: <b>264732</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	273	5.00	250.0	24.08	99.7	70	130	275.3	0.674	20	
Barium, TCLP	523	50.0	250.0	296.8	90.5	70	130	542.0	3.57	20	
Cadmium, TCLP	276	5.00	250.0	41.18	94.0	70	130	302.0	8.94	20	
Chromium, TCLP	279	5.00	250.0	30.38	99.3	70	130	270.4	2.97	20	
Lead, TCLP	1700	5.00	250.0	1563	54.8	70	130	1644	3.32	20	SMC
Selenium, TCLP	259	50.0	250.0	10.13	99.4	70	130	263.8	1.97	20	
Silver, TCLP	229	5.00	250.0	0.3136	91.5	70	130	250.2	8.83	20	

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank	H Holding times for preparation or analysis exceeded	ND Not Detected at the Reporting Limit
	O RSD is greater than RSDlimit	R RPD outside accepted recovery limits	S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 6020\_TCLP

Sample ID: <b>CCV</b>	SampType: <b>CCV</b>	TestCode: <b>6020_TCLP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>19780</b>						
Client ID: <b>CCV</b>	Batch ID: <b>9296</b>	TestNo: <b>E1311/6020</b>	<b>SW3010A</b>	Analysis Date: <b>4/21/2015</b>	SeqNo: <b>264736</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	49.6	0.100	50.00	0	99.1	90	110				
Barium, TCLP	50.9	1.00	50.00	0	102	90	110				
Cadmium, TCLP	50.8	0.100	50.00	0	102	90	110				
Chromium, TCLP	49.2	0.100	50.00	0	98.4	90	110				
Lead, TCLP	48.8	0.100	50.00	0	97.7	90	110				
Selenium, TCLP	52.3	1.00	50.00	0	105	90	110				
Silver, TCLP	48.1	0.100	50.00	0	96.3	90	110				

Sample ID: <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020_TCLP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>19780</b>						
Client ID: <b>ICV</b>	Batch ID: <b>9296</b>	TestNo: <b>E1311/6020</b>	<b>SW3010A</b>	Analysis Date: <b>4/21/2015</b>	SeqNo: <b>264757</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium, TCLP	54.7	1.00	50.00	0	109	90	110				

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank O RSD is greater than RSDlimit	H Holding times for preparation or analysis exceeded R RPD outside accepted recovery limits	ND Not Detected at the Reporting Limit S Spike Recovery outside accepted reco	Page 4 of 26
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# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8082LL\_S

Sample ID: <b>CCV 1016/1260</b>	SampType: <b>CCV</b>	TestCode: <b>8082LL_S</b>	Units: <b>µg/Kg</b>	Prep Date:	RunNo: <b>19847</b>						
Client ID: <b>CCV</b>	Batch ID: <b>9308</b>	TestNo: <b>SW 8082A</b>	<b>3545_8082LL</b>	Analysis Date: <b>4/23/2015</b>	SeqNo: <b>265602</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016/1260	67.1	0.333	66.67	0	101	85	115				

Sample ID: <b>MB-9308</b>	SampType: <b>MBLK</b>	TestCode: <b>8082LL_S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>4/22/2015</b>	RunNo: <b>19847</b>						
Client ID: <b>PBS</b>	Batch ID: <b>9308</b>	TestNo: <b>SW 8082A</b>	<b>3545_8082LL</b>	Analysis Date: <b>4/23/2015</b>	SeqNo: <b>265603</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	ND	0.333									
Aroclor 1221	ND	0.333									
Aroclor 1232	ND	0.333									
Aroclor 1242	ND	0.333									
Aroclor 1248	ND	0.333									
Aroclor 1254	ND	0.333									
Aroclor 1260	ND	0.333									
Aroclor 1262	ND	0.333									
Aroclor 1268	ND	0.333									
Surr: Decachlorobiphenyl	6020		6667		90.4	56.5	130				

Sample ID: <b>LCS-9308</b>	SampType: <b>LCS</b>	TestCode: <b>8082LL_S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>4/22/2015</b>	RunNo: <b>19847</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>9308</b>	TestNo: <b>SW 8082A</b>	<b>3545_8082LL</b>	Analysis Date: <b>4/23/2015</b>	SeqNo: <b>265604</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016/1260	60.5	0.333	66.67	0	90.8	44.3	137				

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank O RSD is greater than RSDlimit	H Holding times for preparation or analysis exceeded R RPD outside accepted recovery limits	ND Not Detected at the Reporting Limit S Spike Recovery outside accepted reco	Page 5 of 26
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# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8082LL\_S

Sample ID: <b>1504185-003BMS</b>	SampType: <b>MS</b>	TestCode: <b>8082LL_S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>4/22/2015</b>	RunNo: <b>19847</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>9308</b>	TestNo: <b>SW 8082A</b>	<b>3545_8082LL</b>	Analysis Date: <b>4/23/2015</b>	SeqNo: <b>265615</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016/1260	45.5	0.333	66.67	0	68.3	56.6	123				

Sample ID: <b>1504185-003BMSD</b>	SampType: <b>MSD</b>	TestCode: <b>8082LL_S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>4/22/2015</b>	RunNo: <b>19847</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>9308</b>	TestNo: <b>SW 8082A</b>	<b>3545_8082LL</b>	Analysis Date: <b>4/23/2015</b>	SeqNo: <b>265616</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016/1260	48.5	0.333	66.67	0	72.7	56.6	123	45.53	6.26	20	

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank O RSD is greater than RSDlimit	H Holding times for preparation or analysis exceeded R RPD outside accepted recovery limits	ND Not Detected at the Reporting Limit S Spike Recovery outside accepted reco	Page 6 of 26
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# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8260\_S

Sample ID: <b>40PPB ICAL</b>	SampType: <b>CCV</b>	TestCode: <b>8260_S</b>	Units: <b>µg/Kg</b>	Prep Date:	RunNo: <b>19777</b>						
Client ID: <b>CCV</b>	Batch ID: <b>9298</b>	TestNo: <b>SW8260B</b>	<b>5030</b>	Analysis Date: <b>4/20/2015</b>	SeqNo: <b>264586</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	39.0	10.0	40.00	0	97.5	80	120				
1,2-Dichloropropane	38.8	10.0	40.00	0	97.1	80	120				
Chloroform	38.1	10.0	40.00	0	95.2	80	120				
Ethylbenzene	43.1	10.0	40.00	0	108	80	120				
Toluene	42.1	10.0	40.00	0	105	80	120				
Vinyl chloride	39.7	10.0	40.00	0	99.2	80	120				

Sample ID: <b>40PPB ICV</b>	SampType: <b>LCS</b>	TestCode: <b>8260_S</b>	Units: <b>µg/Kg</b>	Prep Date:	RunNo: <b>19777</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>9298</b>	TestNo: <b>SW8260B</b>	<b>5030</b>	Analysis Date: <b>4/20/2015</b>	SeqNo: <b>264587</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	38.6	10.0	40.00	0	96.5	80	120				
Benzene	41.4	10.0	40.00	0	104	80	120				
Chlorobenzene	41.5	10.0	40.00	0	104	80	120				
Toluene	41.8	10.0	40.00	0	104	80	120				
Trichloroethene	38.7	10.0	40.00	0	96.8	80	120				

Sample ID: <b>1504159-001CMS</b>	SampType: <b>MS</b>	TestCode: <b>8260_S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>4/17/2015</b>	RunNo: <b>19777</b>						
Client ID: <b>DRUMS-AK-SO-0-10</b>	Batch ID: <b>9298</b>	TestNo: <b>SW8260B</b>	<b>5030</b>	Analysis Date: <b>4/20/2015</b>	SeqNo: <b>264588</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	365	100	400.0	0	91.3	46.6	147				
Benzene	385	100	400.0	0	96.2	65.2	121				

**Qualifiers:** B Analyte detected in the associated Method Blank      H Holding times for preparation or analysis exceeded      ND Not Detected at the Reporting Limit  
O RSD is greater than RSDlimit      R RPD outside accepted recovery limits      S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode: 8260\_S**

Sample ID: <b>1504159-001CMS</b>	SampType: <b>MS</b>	TestCode: <b>8260_S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>4/17/2015</b>	RunNo: <b>19777</b>						
Client ID: <b>DRUMS-AK-SO-0-10</b>	Batch ID: <b>9298</b>	TestNo: <b>SW8260B</b>	<b>5030</b>	Analysis Date: <b>4/20/2015</b>	SeqNo: <b>264588</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	393	100	400.0	0	98.2	40.9	122				
Toluene	392	100	400.0	0	98.1	52.1	127				
Trichloroethene	365	100	400.0	0	91.3	57.6	122				

Sample ID: <b>1504159-001CMSD</b>	SampType: <b>MSD</b>	TestCode: <b>8260_S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>4/17/2015</b>	RunNo: <b>19777</b>						
Client ID: <b>DRUMS-AK-SO-0-10</b>	Batch ID: <b>9298</b>	TestNo: <b>SW8260B</b>	<b>5030</b>	Analysis Date: <b>4/20/2015</b>	SeqNo: <b>264589</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	382	100	400.0	0	95.6	46.6	147	365.3	4.52	20	
Benzene	406	100	400.0	0	101	65.2	121	385.0	5.26	20	
Chlorobenzene	448	100	400.0	0	112	40.9	122	392.8	13.1	20	
Toluene	450	100	400.0	0	112	52.1	127	392.3	13.7	20	
Trichloroethene	390	100	400.0	0	97.5	57.6	122	365.3	6.57	20	

Sample ID: <b>MB</b>	SampType: <b>MBLK</b>	TestCode: <b>8260_S</b>	Units: <b>µg/Kg</b>	Prep Date:	RunNo: <b>19777</b>						
Client ID: <b>PBS</b>	Batch ID: <b>9298</b>	TestNo: <b>SW8260B</b>	<b>5030</b>	Analysis Date: <b>4/20/2015</b>	SeqNo: <b>264590</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	10.0									
1,1,1-Trichloroethane	ND	10.0									
1,1,2,2-Tetrachloroethane	ND	10.0									
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	10.0									
1,1,2-Trichloroethane	ND	10.0									

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank O RSD is greater than RSDlimit	H Holding times for preparation or analysis exceeded R RPD outside accepted recovery limits	ND Not Detected at the Reporting Limit S Spike Recovery outside accepted reco	Page 8 of 26
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# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8260\_S

Sample ID: <b>MB</b>	SampType: <b>MBLK</b>	TestCode: <b>8260_S</b>	Units: <b>µg/Kg</b>	Prep Date:	RunNo: <b>19777</b>						
Client ID: <b>PBS</b>	Batch ID: <b>9298</b>	TestNo: <b>SW8260B</b>	<b>5030</b>	Analysis Date: <b>4/20/2015</b>	SeqNo: <b>264590</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethane	ND	10.0									
1,1-Dichloroethene	ND	10.0									
1,1-Dichloropropene	ND	10.0									
1,2,3-Trichlorobenzene	ND	10.0									
1,2,3-Trichloropropane	ND	10.0									
1,2,4-Trichlorobenzene	ND	10.0									
1,2,4-Trimethylbenzene	ND	10.0									
1,2-Dibromo-3-chloropropane	ND	10.0									
1,2-Dibromoethane	ND	10.0									
1,2-Dichlorobenzene	ND	10.0									
1,2-Dichloroethane	ND	10.0									
1,2-Dichloropropane	ND	10.0									
1,3,5-Trimethylbenzene	ND	10.0									
1,3-Dichlorobenzene	ND	10.0									
1,3-Dichloropropane	ND	10.0									
1,4-Dichlorobenzene	ND	10.0									
2,2-Dichloropropane	ND	10.0									
2-Butanone	ND	20.0									
2-Chlorotoluene	ND	10.0									
2-Hexanone	ND	20.0									
4-Chlorotoluene	ND	10.0									
4-Isopropyltoluene	ND	10.0									
4-Methyl-2-pentanone	ND	20.0									
Acetone	ND	50.0									
Benzene	ND	10.0									
Bromobenzene	ND	10.0									

**Qualifiers:** B Analyte detected in the associated Method Blank H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit  
 O RSD is greater than RSDlimit R RPD outside accepted recovery limits S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8260\_S

Sample ID: <b>MB</b>	SampType: <b>MBLK</b>	TestCode: <b>8260_S</b>	Units: <b>µg/Kg</b>	Prep Date:	RunNo: <b>19777</b>						
Client ID: <b>PBS</b>	Batch ID: <b>9298</b>	TestNo: <b>SW8260B</b>	<b>5030</b>	Analysis Date: <b>4/20/2015</b>	SeqNo: <b>264590</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromochloromethane	ND	10.0									
Bromodichloromethane	ND	10.0									
Bromoform	ND	10.0									
Bromomethane	ND	10.0									
Carbon disulfide	ND	10.0									
Carbon tetrachloride	ND	10.0									
Chlorobenzene	ND	10.0									
Chloroethane	ND	10.0									
Chloroform	ND	10.0									
Chloromethane	ND	10.0									
cis-1,2-Dichloroethene	ND	10.0									
cis-1,3-Dichloropropene	ND	10.0									
Dibromochloromethane	ND	10.0									
Dibromomethane	ND	10.0									
Dichlorodifluoromethane	ND	10.0									
Ethylbenzene	ND	10.0									
Hexachlorobutadiene	ND	10.0									
Isopropylbenzene	ND	10.0									
m,p-Xylene	ND	20.0									
Methyl tert-butyl ether	ND	10.0									
Methylene chloride	ND	50.0									
Naphthalene	ND	10.0									
n-Butylbenzene	ND	10.0									
n-Propylbenzene	ND	10.0									
o-Xylene	ND	10.0									
sec-Butylbenzene	ND	10.0									

**Qualifiers:** B Analyte detected in the associated Method Blank H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit  
 O RSD is greater than RSDlimit R RPD outside accepted recovery limits S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8260\_S

Sample ID: <b>MB</b>	SampType: <b>MBLK</b>	TestCode: <b>8260_S</b>	Units: <b>µg/Kg</b>	Prep Date:	RunNo: <b>19777</b>						
Client ID: <b>PBS</b>	Batch ID: <b>9298</b>	TestNo: <b>SW8260B</b>	<b>5030</b>	Analysis Date: <b>4/20/2015</b>	SeqNo: <b>264590</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Styrene	ND	10.0									
tert-Butylbenzene	ND	10.0									
Tetrachloroethene	ND	10.0									
Toluene	ND	10.0									
trans-1,2-Dichloroethene	ND	10.0									
trans-1,3-Dichloropropene	ND	10.0									
Trichloroethene	ND	10.0									
Trichlorofluoromethane	ND	10.0									
Vinyl chloride	ND	10.0									
Surr: 1,2-Dichloroethane-d4	111		100.0		111	71.5	112				
Surr: 4-Bromofluorobenzene	100		100.0		100	75.7	122				
Surr: Dibromofluoromethane	115		100.0		115	64.3	124				
Surr: Toluene-d8	110		100.0		110	74.9	120				

**Qualifiers:** B Analyte detected in the associated Method Blank H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit Page 11 of 26  
O RSD is greater than RSDlimit R RPD outside accepted recovery limits S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8270LL\_S

Sample ID: <b>CCV-9280</b>	SampType: <b>CCV</b>	TestCode: <b>8270LL_S</b>	Units: <b>µg/Kg</b>	Prep Date:	RunNo: <b>19805</b>						
Client ID: <b>CCV</b>	Batch ID: <b>9280</b>	TestNo: <b>SW8270D</b>	<b>SW 3545A</b>	Analysis Date: <b>4/22/2015</b>	SeqNo: <b>264941</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,4-Dichlorobenzene	1220	33.3	1333	0	91.3	80	120				
2,4,6-Trichlorophenol	1590	33.3	1333	0	119	80	120				
2,4-Dichlorophenol	1550	33.3	1333	0	117	80	120				
2-Nitrophenol	1380	167	1333	0	103	80	120				
4-Chloro-3-methylphenol	1520	33.3	1333	0	114	80	120				
Acenaphthene	1470	33.3	1333	0	110	80	120				
Benzo(a)pyrene	1380	33.3	1333	0	103	80	120				
Di-n-octyl phthalate	1340	33.3	1333	0	100	80	120				
Fluoranthene	1590	33.3	1333	0	119	80	120				
Hexachlorobutadiene	1200	33.3	1333	0	89.8	80	120				
N-Nitrosodiphenylamine	1560	33.3	1333	0	117	80	120				
Pentachlorophenol	1130	50.0	1333	0	84.9	80	120				
Phenol	1350	33.3	1333	0	101	80	120				

Sample ID: <b>LCS-9280</b>	SampType: <b>LCS</b>	TestCode: <b>8270LL_S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>4/17/2015</b>	RunNo: <b>19805</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>9280</b>	TestNo: <b>SW8270D</b>	<b>SW 3545A</b>	Analysis Date: <b>4/22/2015</b>	SeqNo: <b>264942</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	1220	33.3	1666	0	72.9	30.9	106				
1,4-Dichlorobenzene	1050	33.3	1666	0	63.0	31.4	98.2				
2,4-Dinitrotoluene	1030	33.3	1666	0	61.7	59.7	111				
2-Chlorophenol	958	33.3	1666	0	57.5	46.2	105				
4-Chloro-3-methylphenol	1020	33.3	1666	0	61.2	47.4	114				
4-Nitrophenol	991	167	1666	0	59.4	45.3	114				

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank O RSD is greater than RSDlimit	H Holding times for preparation or analysis exceeded R RPD outside accepted recovery limits	ND Not Detected at the Reporting Limit S Spike Recovery outside accepted reco	Page 12 of 26
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# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8270LL\_S

Sample ID: <b>LCS-9280</b>	SampType: <b>LCS</b>	TestCode: <b>8270LL_S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>4/17/2015</b>	RunNo: <b>19805</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>9280</b>	TestNo: <b>SW8270D</b>	<b>SW 3545A</b>	Analysis Date: <b>4/22/2015</b>	SeqNo: <b>264942</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	934	33.3	1666	0	56.0	48.2	105				
N-Nitrosodi-n-propylamine	1550	33.3	1666	0	92.9	42.4	101				
Pentachlorophenol	808	50.0	1666	0	48.5	46.8	120				
Phenol	1170	33.3	1666	0	70.2	51.1	103				
Pyrene	959	33.3	1666	0	57.5	56.7	130				

Sample ID: <b>MB-9280</b>	SampType: <b>MBLK</b>	TestCode: <b>8270LL_S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>4/17/2015</b>	RunNo: <b>19805</b>						
Client ID: <b>PBS</b>	Batch ID: <b>9280</b>	TestNo: <b>SW8270D</b>	<b>SW 3545A</b>	Analysis Date: <b>4/22/2015</b>	SeqNo: <b>264943</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	ND	33.3									
1,2-Dichlorobenzene	ND	33.3									
1,2-Diphenylhydrazine	ND	167									
1,3-Dichlorobenzene	ND	33.3									
1,4-Dichlorobenzene	ND	33.3									
1-Methylnaphthalene	ND	33.3									
2,4,5-Trichlorophenol	ND	33.3									
2,4,6-Trichlorophenol	ND	33.3									
2,4-Dichlorophenol	ND	33.3									
2,4-Dimethylphenol	ND	33.3									
2,4-Dinitrophenol	ND	333									
2,4-Dinitrotoluene	ND	33.3									
2,6-Dinitrotoluene	ND	33.3									
2-Chloronaphthalene	ND	33.3									

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank O RSD is greater than RSDlimit	H Holding times for preparation or analysis exceeded R RPD outside accepted recovery limits	ND Not Detected at the Reporting Limit S Spike Recovery outside accepted reco	Page 13 of 26
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# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8270LL\_S

Sample ID: <b>MB-9280</b>	SampType: <b>MBLK</b>	TestCode: <b>8270LL_S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>4/17/2015</b>	RunNo: <b>19805</b>						
Client ID: <b>PBS</b>	Batch ID: <b>9280</b>	TestNo: <b>SW8270D</b>	<b>SW 3545A</b>	Analysis Date: <b>4/22/2015</b>	SeqNo: <b>264943</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Chlorophenol	ND	33.3									
2-Methylnaphthalene	ND	33.3									
2-Methylphenol	ND	33.3									
2-Nitroaniline	ND	33.3									
2-Nitrophenol	ND	167									
3-&4-Methylphenol	ND	33.3									
3,3-Dichlorobenzidine	ND	167									
3-Nitroaniline	ND	33.3									
4,6-Dinitro-2-methylphenol	ND	167									
4-Bromophenyl phenyl ether	ND	33.3									
4-Chloro-3-methylphenol	ND	33.3									
4-Chloroaniline	ND	33.3									
4-Chlorophenyl phenyl ether	ND	33.3									
4-Nitroaniline	ND	33.3									
4-Nitrophenol	ND	167									
Acenaphthene	ND	33.3									
Acenaphthylene	ND	33.3									
Aniline	ND	33.3									
Anthracene	ND	33.3									
Benz(a)anthracene	ND	33.3									
Benzidine	ND	167									
Benzo(a)pyrene	ND	33.3									
Benzo(b)fluoranthene	ND	33.3									
Benzo(g,h,i)perylene	ND	33.3									
Benzo(k)fluoranthene	ND	33.3									
Benzoic Acid	ND	667									

**Qualifiers:** B Analyte detected in the associated Method Blank H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit Page 14 of 26  
O RSD is greater than RSDlimit R RPD outside accepted recovery limits S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8270LL\_S

Sample ID: <b>MB-9280</b>	SampType: <b>MBLK</b>	TestCode: <b>8270LL_S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>4/17/2015</b>	RunNo: <b>19805</b>						
Client ID: <b>PBS</b>	Batch ID: <b>9280</b>	TestNo: <b>SW8270D</b>	<b>SW 3545A</b>	Analysis Date: <b>4/22/2015</b>	SeqNo: <b>264943</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzyl Alcohol	ND	33.3									
Benzyl butyl phthalate	ND	33.3									
Bis(2-chloroethoxy)methane	ND	33.3									
Bis(2-chloroethyl)ether	ND	33.3									
Bis(2-chloroisopropyl)ether	ND	33.3									
Bis(2-ethylhexyl)phthalate	ND	33.3									
Carbazole	ND	33.3									
Chrysene	ND	33.3									
Dibenz(a,h)anthracene	ND	33.3									
Dibenzofuran	ND	33.3									
Diethyl phthalate	ND	33.3									
Dimethyl phthalate	ND	33.3									
Di-n-butyl phthalate	ND	50.0									
Di-n-octyl phthalate	ND	33.3									
Fluoranthene	ND	33.3									
Fluorene	ND	33.3									
Hexachlorobenzene	ND	33.3									
Hexachlorobutadiene	ND	33.3									
Hexachlorocyclopentadiene	ND	33.3									
Hexachloroethane	ND	33.3									
Indeno(1,2,3-cd)pyrene	ND	33.3									
Isophorone	ND	33.3									
Naphthalene	ND	33.3									
Nitrobenzene	ND	33.3									
N-Nitrosodimethylamine	ND	33.3									
N-Nitrosodi-n-propylamine	ND	33.3									

**Qualifiers:** B Analyte detected in the associated Method Blank H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit Page 15 of 26  
O RSD is greater than RSDlimit R RPD outside accepted recovery limits S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8270LL\_S

Sample ID: <b>MB-9280</b>	SampType: <b>MBLK</b>	TestCode: <b>8270LL_S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>4/17/2015</b>	RunNo: <b>19805</b>						
Client ID: <b>PBS</b>	Batch ID: <b>9280</b>	TestNo: <b>SW8270D</b>	<b>SW 3545A</b>	Analysis Date: <b>4/22/2015</b>	SeqNo: <b>264943</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
N-Nitrosodiphenylamine	ND	33.3									
Pentachlorophenol	ND	50.0									
Phenanthrene	ND	33.3									
Phenol	ND	33.3									
Pyrene	ND	33.3									
Pyridine	ND	167									
Surr: 2,4,6-Tribromophenol	2560		3333		76.8	57.8	119				
Surr: 2-Fluorobiphenyl	3140		3333		94.3	52.6	93.2				S
Surr: 2-Fluorophenol	2570		3333		77.2	40.7	111				
Surr: 4-Terphenyl-d14	2790		3333		83.8	49.8	118				
Surr: Nitrobenzene-d5	3440		3333		103	44.8	103				S
Surr: Phenol-d6	2420		3333		72.7	47.5	117				

Sample ID: <b>1504159-001BMS</b>	SampType: <b>MS</b>	TestCode: <b>8270LL_S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>4/17/2015</b>	RunNo: <b>19805</b>						
Client ID: <b>DRUMS-AK-SO-0-10</b>	Batch ID: <b>9280</b>	TestNo: <b>SW8270D</b>	<b>SW 3545A</b>	Analysis Date: <b>4/22/2015</b>	SeqNo: <b>264947</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	885	33.3	1666	0	53.1	31.1	92.7				
1,4-Dichlorobenzene	624	33.3	1666	0	37.4	16.5	85.6				
2,4-Dinitrotoluene	718	33.3	1666	4.667	42.8	43.4	118				SMI
2-Chlorophenol	615	33.3	1666	0	36.9	36.8	103				
4-Chloro-3-methylphenol	829	33.3	1666	0	49.7	49.5	119				
4-Nitrophenol	539	167	1666	0	32.3	45	111				SMI
Acenaphthene	718	33.3	1666	0	43.1	45.1	102				SMI

**Qualifiers:** B Analyte detected in the associated Method Blank H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit  
 O RSD is greater than RSDlimit R RPD outside accepted recovery limits S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8270LL\_S

Sample ID: <b>1504159-001BMS</b>		SampType: <b>MS</b>		TestCode: <b>8270LL_S</b>		Units: <b>µg/Kg</b>		Prep Date: <b>4/17/2015</b>		RunNo: <b>19805</b>	
Client ID: <b>DRUMS-AK-SO-0-10</b>		Batch ID: <b>9280</b>		TestNo: <b>SW8270D</b>		<b>SW 3545A</b>		Analysis Date: <b>4/22/2015</b>		SeqNo: <b>264947</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
N-Nitrosodi-n-propylamine	1080	33.3	1666	0	65.0	45.6	94.1				
Pentachlorophenol	447	50.0	1666	0	26.8	36.6	112				SMI
Phenol	753	33.3	1666	0	45.2	37.7	107				
Pyrene	1060	33.3	1666	327.7	43.9	42.4	131				

Sample ID: <b>1504159-001BMSD</b>		SampType: <b>MSD</b>		TestCode: <b>8270LL_S</b>		Units: <b>µg/Kg</b>		Prep Date: <b>4/17/2015</b>		RunNo: <b>19805</b>	
Client ID: <b>DRUMS-AK-SO-0-10</b>		Batch ID: <b>9280</b>		TestNo: <b>SW8270D</b>		<b>SW 3545A</b>		Analysis Date: <b>4/22/2015</b>		SeqNo: <b>264948</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	1570	33.3	1666	0	94.4	31.1	92.7	885.3	55.9	20	SR
1,4-Dichlorobenzene	1020	33.3	1666	0	61.0	16.5	85.6	624.0	47.9	20	R
2,4-Dinitrotoluene	1180	33.3	1666	4.667	70.6	43.4	118	718.0	48.8	20	R
2-Chlorophenol	1140	33.3	1666	0	68.6	36.8	103	615.3	60.0	20	R
4-Chloro-3-methylphenol	1470	33.3	1666	0	87.9	49.5	119	828.7	55.5	20	R
4-Nitrophenol	1070	167	1666	0	64.3	45	111	538.7	66.3	20	R
Acenaphthene	1380	33.3	1666	0	82.9	45.1	102	718.0	63.2	20	R
N-Nitrosodi-n-propylamine	1780	33.3	1666	0	107	45.6	94.1	1083	48.7	20	SR
Pentachlorophenol	792	50.0	1666	0	47.5	36.6	112	447.3	55.6	20	R
Phenol	1420	33.3	1666	0	85.1	37.7	107	753.0	61.3	20	R
Pyrene	1220	33.3	1666	327.7	53.4	42.4	131	1060	13.8	20	

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank	H Holding times for preparation or analysis exceeded	ND Not Detected at the Reporting Limit
	O RSD is greater than RSDlimit	R RPD outside accepted recovery limits	S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** CN\_S

Sample ID: <b>R19786ICV</b>	SampType: <b>ICV</b>	TestCode: <b>CN_S</b>	Units: <b>mg/Kg</b>	Prep Date:	RunNo: <b>19786</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R19786</b>	TestNo: <b>SW9012B</b>		Analysis Date: <b>4/21/2015</b>	SeqNo: <b>264701</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Cyanide, Total	2.77	0.200	3.000	0	92.3	90	110				
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Sample ID: <b>MB-R19786</b>	SampType: <b>MBLK</b>	TestCode: <b>CN_S</b>	Units: <b>mg/Kg</b>	Prep Date:	RunNo: <b>19786</b>						
Client ID: <b>PBS</b>	Batch ID: <b>R19786</b>	TestNo: <b>SW9012B</b>		Analysis Date: <b>4/21/2015</b>	SeqNo: <b>264702</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Cyanide, Total	ND	0.200									
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Sample ID: <b>LCS-R19786</b>	SampType: <b>LCS</b>	TestCode: <b>CN_S</b>	Units: <b>mg/Kg</b>	Prep Date:	RunNo: <b>19786</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>R19786</b>	TestNo: <b>SW9012B</b>		Analysis Date: <b>4/21/2015</b>	SeqNo: <b>264703</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Cyanide, Total	1.93	0.200	2.000	0	96.3	85	115				
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Sample ID: <b>R19786CCV</b>	SampType: <b>CCV</b>	TestCode: <b>CN_S</b>	Units: <b>mg/Kg</b>	Prep Date:	RunNo: <b>19786</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R19786</b>	TestNo: <b>SW9012B</b>		Analysis Date: <b>4/21/2015</b>	SeqNo: <b>264705</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Cyanide, Total	2.75	0.200	3.000	0	91.6	90	110				
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<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank	H Holding times for preparation or analysis exceeded	ND Not Detected at the Reporting Limit	Page 18 of 26
	O RSD is greater than RSDlimit	R RPD outside accepted recovery limits	S Spike Recovery outside accepted reco	

# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** CN\_S

Sample ID: <b>1504159-001BMS</b>	SampType: <b>MS</b>	TestCode: <b>CN_S</b>	Units: <b>mg/Kg</b>	Prep Date:	RunNo: <b>19786</b>						
Client ID: <b>DRUMS-AK-SO-0-10</b>	Batch ID: <b>R19786</b>	TestNo: <b>SW9012B</b>		Analysis Date: <b>4/21/2015</b>	SeqNo: <b>264707</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	1.44	0.200	1.000	0.5290	91.2	80	120				

Sample ID: <b>1504159-001BMSD</b>	SampType: <b>MSD</b>	TestCode: <b>CN_S</b>	Units: <b>mg/Kg</b>	Prep Date:	RunNo: <b>19786</b>						
Client ID: <b>DRUMS-AK-SO-0-10</b>	Batch ID: <b>R19786</b>	TestNo: <b>SW9012B</b>		Analysis Date: <b>4/21/2015</b>	SeqNo: <b>264708</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	1.42	0.200	1.000	0.5290	89.2	80	120	1.441	1.40	20	

Sample ID: <b>R19786CCV</b>	SampType: <b>CCV</b>	TestCode: <b>CN_S</b>	Units: <b>mg/Kg</b>	Prep Date:	RunNo: <b>19786</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R19786</b>	TestNo: <b>SW9012B</b>		Analysis Date: <b>4/21/2015</b>	SeqNo: <b>264711</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	3.19	0.200	3.500	0	91.0	90	110				

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank O RSD is greater than RSDlimit	H Holding times for preparation or analysis exceeded R RPD outside accepted recovery limits	ND Not Detected at the Reporting Limit S Spike Recovery outside accepted reco	Page 19 of 26
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# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** HG\_CT

Sample ID: <b>1504159-002BMSD</b>	SampType: <b>MSD</b>	TestCode: <b>HG_CT</b>	Units: <b>mg/L</b>	Prep Date: <b>4/22/2015</b>	RunNo: <b>19795</b>						
Client ID: <b>DRUMS-SO-10-35</b>	Batch ID: <b>9301</b>	TestNo: <b>E7470A</b>	<b>E245.1</b>	Analysis Date: <b>4/22/2015</b>	SeqNo: <b>264833</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury, TCLP	0.00345	0.000100	0.004000	0.00001660	85.8	69.5	125	0.003378	2.02	20	

Sample ID: <b>CCV</b>	SampType: <b>CCV</b>	TestCode: <b>HG_CT</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>19795</b>						
Client ID: <b>CCV</b>	Batch ID: <b>9301</b>	TestNo: <b>E7470A</b>	<b>E245.1</b>	Analysis Date: <b>4/22/2015</b>	SeqNo: <b>264835</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury, TCLP	0.00396	0.000100	0.004000	0	99.0	90	110				

**Qualifiers:** B Analyte detected in the associated Method Blank      H Holding times for preparation or analysis exceeded      ND Not Detected at the Reporting Limit      Page 21 of 26  
O RSD is greater than RSDlimit      R RPD outside accepted recovery limits      S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** NWTPHDX\_S

Sample ID: <b>CCV</b>	SampType: <b>CCV</b>	TestCode: <b>NWTPHDX_S</b>	Units: <b>mg/Kg</b>	Prep Date:	RunNo: <b>19789</b>						
Client ID: <b>CCV</b>	Batch ID: <b>9289</b>	TestNo: <b>NWTPH-Dx</b>	<b>SW3545A</b>	Analysis Date: <b>4/21/2015</b>	SeqNo: <b>264758</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	1300	15.0	1332	0	97.8	85	115				
Lube Oil	636	50.0	666.0	0	95.4	85	115				

Sample ID: <b>MB-9289</b>	SampType: <b>MBLK</b>	TestCode: <b>NWTPHDX_S</b>	Units: <b>mg/Kg</b>	Prep Date: <b>4/20/2015</b>	RunNo: <b>19789</b>						
Client ID: <b>PBS</b>	Batch ID: <b>9289</b>	TestNo: <b>NWTPH-Dx</b>	<b>SW3545A</b>	Analysis Date: <b>4/21/2015</b>	SeqNo: <b>264759</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	ND	15.0									
Lube Oil	ND	50.0									
Surr: o-Terphenyl	36.7		33.30		110	50	150				

Sample ID: <b>LCS-9289</b>	SampType: <b>LCS</b>	TestCode: <b>NWTPHDX_S</b>	Units: <b>mg/Kg</b>	Prep Date: <b>4/20/2015</b>	RunNo: <b>19789</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>9289</b>	TestNo: <b>NWTPH-Dx</b>	<b>SW3545A</b>	Analysis Date: <b>4/21/2015</b>	SeqNo: <b>264760</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	180	15.0	166.5	0	108	76.3	125				
Lube Oil	168	50.0	166.5	0	101	69.9	127				

Sample ID: <b>1504165-013ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>NWTPHDX_S</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>4/20/2015</b>	RunNo: <b>19789</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>9289</b>	TestNo: <b>NWTPH-Dx</b>	<b>SW3545A</b>	Analysis Date: <b>4/21/2015</b>	SeqNo: <b>264764</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

**Qualifiers:** B Analyte detected in the associated Method Blank      H Holding times for preparation or analysis exceeded      ND Not Detected at the Reporting Limit      Page 22 of 26  
O RSD is greater than RSDlimit      R RPD outside accepted recovery limits      S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** NWTPHDX\_S

Sample ID: <b>1504165-013ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>NWTPHDX_S</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>4/20/2015</b>	RunNo: <b>19789</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>9289</b>	TestNo: <b>NWTPH-Dx</b>	<b>SW3545A</b>	Analysis Date: <b>4/21/2015</b>	SeqNo: <b>264764</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	ND	19.2						0	0	20	
Lube Oil	ND	64.1						0	0	20	RF

Sample ID: <b>CCV</b>	SampType: <b>CCV</b>	TestCode: <b>NWTPHDX_S</b>	Units: <b>mg/Kg</b>	Prep Date:	RunNo: <b>19789</b>						
Client ID: <b>CCV</b>	Batch ID: <b>9289</b>	TestNo: <b>NWTPH-Dx</b>	<b>SW3545A</b>	Analysis Date: <b>4/22/2015</b>	SeqNo: <b>265207</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	1030	15.0	999.0	0	103	85	115				
Lube Oil	548	50.0	499.5	0	110	85	115				

Sample ID: <b>CCB</b>	SampType: <b>CCB</b>	TestCode: <b>NWTPHDX_S</b>	Units: <b>mg/Kg</b>	Prep Date:	RunNo: <b>19789</b>						
Client ID: <b>CCB</b>	Batch ID: <b>9289</b>	TestNo: <b>NWTPH-Dx</b>	<b>SW3545A</b>	Analysis Date: <b>4/23/2015</b>	SeqNo: <b>265208</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	ND	15.0									
Lube Oil	ND	50.0									
Surr: o-Terphenyl	36.6		33.30		110	50	150				

Sample ID: <b>1504161-015ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>NWTPHDX_S</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>4/20/2015</b>	RunNo: <b>19789</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>9289</b>	TestNo: <b>NWTPH-Dx</b>	<b>SW3545A</b>	Analysis Date: <b>4/23/2015</b>	SeqNo: <b>265216</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

**Qualifiers:** B Analyte detected in the associated Method Blank      H Holding times for preparation or analysis exceeded      ND Not Detected at the Reporting Limit      Page 23 of 26  
O RSD is greater than RSDlimit      R RPD outside accepted recovery limits      S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** NWTPHDX\_S

Sample ID: <b>1504161-015ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>NWTPHDX_S</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>4/20/2015</b>	RunNo: <b>19789</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>9289</b>	TestNo: <b>NWTPH-Dx</b>	<b>SW3545A</b>	Analysis Date: <b>4/23/2015</b>	SeqNo: <b>265216</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	ND	19.1						0	0	20	RF
Lube Oil	ND	63.7						0	200	20	RF

Sample ID: <b>CCV</b>	SampType: <b>CCV</b>	TestCode: <b>NWTPHDX_S</b>	Units: <b>mg/Kg</b>	Prep Date:	RunNo: <b>19789</b>						
Client ID: <b>CCV</b>	Batch ID: <b>9289</b>	TestNo: <b>NWTPH-Dx</b>	<b>SW3545A</b>	Analysis Date: <b>4/23/2015</b>	SeqNo: <b>265224</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	1530	15.0	1332	0	115	85	115				
Lube Oil	765	50.0	666.0	0	115	85	115				

**Qualifiers:** B Analyte detected in the associated Method Blank      H Holding times for preparation or analysis exceeded      ND Not Detected at the Reporting Limit      Page 24 of 26  
O RSD is greater than RSDlimit      R RPD outside accepted recovery limits      S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** NWTPHGX\_S

Sample ID: <b>CCV</b>	SampType: <b>CCV</b>	TestCode: <b>NWTPHGX_S</b>	Units: <b>mg/Kg</b>	Prep Date:	RunNo: <b>19832</b>						
Client ID: <b>CCV</b>	Batch ID: <b>9281</b>	TestNo: <b>NWTPH-Gx</b>	<b>5030_G_S</b>	Analysis Date: <b>4/23/2015</b>	SeqNo: <b>265370</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline 84.3 2.50 100.0 0 84.3 80 120

Sample ID: <b>MB-9281</b>	SampType: <b>MBLK</b>	TestCode: <b>NWTPHGX_S</b>	Units: <b>mg/Kg</b>	Prep Date: <b>4/17/2015</b>	RunNo: <b>19832</b>						
Client ID: <b>PBS</b>	Batch ID: <b>9281</b>	TestNo: <b>NWTPH-Gx</b>	<b>5030_G_S</b>	Analysis Date: <b>4/23/2015</b>	SeqNo: <b>265371</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline ND 2.50  
 Surr: 4-Bromofluorobenzene 3.58 5.000 71.7 50 150

Sample ID: <b>LCS-9281</b>	SampType: <b>LCS</b>	TestCode: <b>NWTPHGX_S</b>	Units: <b>mg/Kg</b>	Prep Date: <b>4/17/2015</b>	RunNo: <b>19832</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>9281</b>	TestNo: <b>NWTPH-Gx</b>	<b>5030_G_S</b>	Analysis Date: <b>4/23/2015</b>	SeqNo: <b>265372</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline 59.0 2.50 50.00 0 118 53.5 121

Sample ID: <b>1504160-004ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>NWTPHGX_S</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>4/17/2015</b>	RunNo: <b>19832</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>9281</b>	TestNo: <b>NWTPH-Gx</b>	<b>5030_G_S</b>	Analysis Date: <b>4/23/2015</b>	SeqNo: <b>265375</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline ND 3.11 0 0 20

**Qualifiers:** B Analyte detected in the associated Method Blank H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit Page 25 of 26  
 O RSD is greater than RSDlimit R RPD outside accepted recovery limits S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504159

29-Apr-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** NWTPHGX\_S

Sample ID: <b>1504161-005ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>NWTPHGX_S</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>4/17/2015</b>	RunNo: <b>19832</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>9281</b>	TestNo: <b>NWTPH-Gx 5030_G_S</b>		Analysis Date: <b>4/23/2015</b>	SeqNo: <b>265379</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	3.14						0	0	20	

Sample ID: <b>CCV</b>	SampType: <b>CCV</b>	TestCode: <b>NWTPHGX_S</b>	Units: <b>mg/Kg</b>	Prep Date:	RunNo: <b>19832</b>						
Client ID: <b>CCV</b>	Batch ID: <b>9281</b>	TestNo: <b>NWTPH-Gx 5030_G_S</b>		Analysis Date: <b>4/24/2015</b>	SeqNo: <b>265387</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	105	2.50	125.0	0	84.0	80	120				

Sample ID: <b>CCV</b>	SampType: <b>CCV</b>	TestCode: <b>NWTPHGX_S</b>	Units: <b>mg/Kg</b>	Prep Date:	RunNo: <b>19832</b>						
Client ID: <b>CCV</b>	Batch ID: <b>9281</b>	TestNo: <b>NWTPH-Gx 5030_G_S</b>		Analysis Date: <b>4/24/2015</b>	SeqNo: <b>265395</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	124	2.50	125.0	0	98.9	80	120				

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank O RSD is greater than RSDlimit	H Holding times for preparation or analysis exceeded R RPD outside accepted recovery limits	ND Not Detected at the Reporting Limit S Spike Recovery outside accepted reco	Page 26 of 26
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## KEY TO FLAGS

Rev. May 12, 2010

- A This sample contains a Gasoline Range Organic not identified as a specific hydrocarbon product. The result was quantified against gasoline calibration standards
- A1 This sample contains a Diesel Range Organic not identified as a specific hydrocarbon product. The result was quantified against diesel calibration standards.
- A2 This sample contains a Lube Oil Range Organic not identified as a specific hydrocarbon product. The result was quantified against a lube oil calibration standard.
- A3 The result was determined to be Non-Detect based on hydrocarbon pattern recognition. The product was carry-over from another hydrocarbon type.
- A4 The product appears to be aged or degraded diesel.
- B The blank exhibited a positive result great than the reporting limit for this compound.
- CN See Case Narrative.
- D Result is based from a dilution.
- E Result exceeds the calibration range for this compound. The result should be considered as estimate.
- F The positive result for this hydrocarbon is due to single component contamination. The product does not match any hydrocarbon in the fuels library.
- G Result may be biased high due to biogenic interferences. Clean up is recommended.
- H Sample was analyzed outside recommended holding time.
- HT At clients request, samples was analyzed outside of recommended holding time.
- J The result for this analyte is between the MDL and the PQL and should be considered as estimated concentration.
- K Diesel result is biased high due to amount of Oil contained in the sample.
- L Diesel result is biased high due to amount of Gasoline contained in the sample.
- M Oil result is biased high due to amount of Diesel contained in the sample.
- MC Sample concentration is greater than 4x the spiked value, the spiked value is considered insignificant.
- MI Result is outside control limits due to matrix interference.
- MSA Value determined by Method of Standard Addition.
- O Laboratory Control Standard (LCS) exceeded laboratory control limits, but meets CCV criteria. Data meets EPA requirements.
- Q Detection levels elevated due to sample matrix.
- R RPD control limits were exceeded.
- RF Duplicate failed due to result being at or near the method-reporting limit.
- RP Matrix spike values exceed established QC limits; post digestion spike is in control.
- S Recovery is outside control limits.
- SC Closing CCV or LCS exceeded high recovery control limits, but associated samples are non-detect. Data meets EPA requirements.
- \* The result for this parameter was greater than the maximum contaminant level of the TCLP regulatory limit.





# Specialty Analytical

11711 SE Capps Road, Ste B  
Clackamas, Oregon 97015  
TEL: 503-607-1331 FAX: 503-607-1336  
Website: [www.specialtyanalytical.com](http://www.specialtyanalytical.com)

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May 04, 2015

James Peale  
Maul Foster & Alongi  
400 E. Mill Plain Blvd.  
Suite 400  
Vancouver, WA 98660  
TEL: (360) 694-2691  
FAX: (360) 906-1958  
RE: Siltronic IDW / 8128.01.08/08

Dear James Peale:

Order No.: 1504254

Specialty Analytical received 1 sample(s) on 4/30/2015 for the analyses presented in the following report.

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications, except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Marty French". The signature is cursive and somewhat stylized.

Marty French  
Lab Director

# Specialty Analytical

Date Reported: 04-May-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08  
**Lab ID:** 1504254-001  
**Client Sample ID:** Totes-Comp-W

**Collection Date:** 4/30/2015 1:40:00 PM

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>NWTPH-DX - RBC</b>		<b>NWTPH-DX</b>				Analyst: <b>BS</b>
Diesel	2.44	0.0787	A1	mg/L	1	5/2/2015 4:48:26 AM
Lube Oil	1.56	0.197	A2	mg/L	1	5/2/2015 4:48:26 AM
Surr: o-Terphenyl	25.3	50-150	SMI	%REC	1	5/2/2015 4:48:26 AM
<b>NWTPH-GX</b>		<b>NWTPH-GX</b>				Analyst: <b>BS</b>
Gasoline	1100	100		µg/L	1	5/1/2015 2:16:36 PM
Surr: 4-Bromofluorobenzene	104	50-150		%REC	1	5/1/2015 2:16:36 PM
<b>TCLP 8 ICP/MS METALS-TCLP LEACHED</b>		<b>E1311/6020</b>				Analyst: <b>KP</b>
Arsenic, TCLP	ND	5.00		µg/L	10	5/4/2015 12:23:00 PM
Barium, TCLP	167	50.0		µg/L	10	5/4/2015 12:23:00 PM
Cadmium, TCLP	ND	5.00		µg/L	10	5/4/2015 12:23:00 PM
Chromium, TCLP	ND	5.00		µg/L	10	5/4/2015 12:23:00 PM
Lead, TCLP	6.27	5.00		µg/L	10	5/4/2015 12:23:00 PM
Selenium, TCLP	ND	50.0		µg/L	10	5/4/2015 12:23:00 PM
Silver, TCLP	ND	5.00		µg/L	10	5/4/2015 12:23:00 PM
<b>TCLP 8 TOTAL MERCURY</b>		<b>E7470A</b>				Analyst: <b>BW</b>
Mercury, TCLP	ND	0.000200		mg/L	1	5/1/2015 8:01:09 AM
<b>SEMIVOLATILE ORGANICS-LOW LEVEL</b>		<b>SW8270D</b>				Analyst: <b>bda</b>
1,2,4-Trichlorobenzene	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM
1,2-Dichlorobenzene	3.42	0.967		µg/L	1	5/1/2015 12:26:00 PM
1,2-Diphenylhydrazine	ND	4.84		µg/L	1	5/1/2015 12:26:00 PM
1,3-Dichlorobenzene	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM
1,4-Dichlorobenzene	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM
1-Methylnaphthalene	53.5	0.967		µg/L	1	5/1/2015 12:26:00 PM
2,3,4-Trichlorophenol	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM
2,3,5,6-Tetrachlorophenol	ND	4.84		µg/L	1	5/1/2015 12:26:00 PM
2,3,5-Trichlorophenol	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM
2,3,6-Trichlorophenol	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM
2,4,5-Trichlorophenol	ND	4.84		µg/L	1	5/1/2015 12:26:00 PM
2,4,6-Trichlorophenol	ND	4.84		µg/L	1	5/1/2015 12:26:00 PM
2,4-Dichlorophenol	ND	2.90		µg/L	1	5/1/2015 12:26:00 PM
2,4-Dimethylphenol	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM
2,4-Dinitrophenol	ND	9.67		µg/L	1	5/1/2015 12:26:00 PM
2,4-Dinitrotoluene	ND	4.84		µg/L	1	5/1/2015 12:26:00 PM
2,6-Dinitrotoluene	ND	4.84		µg/L	1	5/1/2015 12:26:00 PM
2-Chloronaphthalene	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM

# Specialty Analytical

Date Reported: 04-May-15

CLIENT: Maul Foster & Alongi  
Project: Siltronic IDW / 8128.01.08/08  
Lab ID: 1504254-001  
Client Sample ID: Totes-Comp-W

Collection Date: 4/30/2015 1:40:00 PM

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>SEMIVOLATILE ORGANICS-LOW LEVEL</b>		<b>SW8270D</b>				Analyst: <b>bda</b>
2-Chlorophenol	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM
2-Methylnaphthalene	103	4.84		µg/L	5	5/1/2015 1:21:00 PM
2-Methylphenol	ND	1.93		µg/L	1	5/1/2015 12:26:00 PM
2-Nitroaniline	ND	4.84		µg/L	1	5/1/2015 12:26:00 PM
2-Nitrophenol	ND	4.84		µg/L	1	5/1/2015 12:26:00 PM
3-&4-Methylphenol	ND	9.67		µg/L	1	5/1/2015 12:26:00 PM
3,3'-Dichlorobenzidine	ND	4.84		µg/L	1	5/1/2015 12:26:00 PM
3-Nitroaniline	ND	5.80		µg/L	1	5/1/2015 12:26:00 PM
4,6-Dinitro-2-methylphenol	ND	9.67		µg/L	1	5/1/2015 12:26:00 PM
4-Bromophenyl phenyl ether	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM
4-Chloro-3-methylphenol	ND	1.93		µg/L	1	5/1/2015 12:26:00 PM
4-Chloroaniline	ND	2.90		µg/L	1	5/1/2015 12:26:00 PM
4-Chlorophenyl phenyl ether	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM
4-Nitroaniline	ND	4.84		µg/L	1	5/1/2015 12:26:00 PM
4-Nitrophenol	ND	4.84		µg/L	1	5/1/2015 12:26:00 PM
Acenaphthene	95.0	4.84		µg/L	5	5/1/2015 1:21:00 PM
Acenaphthylene	3.70	0.967		µg/L	1	5/1/2015 12:26:00 PM
Anthracene	33.4	0.967		µg/L	1	5/1/2015 12:26:00 PM
Benz(a)anthracene	29.2	0.967		µg/L	1	5/1/2015 12:26:00 PM
Benzo(a)pyrene	35.1	0.967		µg/L	1	5/1/2015 12:26:00 PM
Benzo(b)fluoranthene	35.8	0.967		µg/L	1	5/1/2015 12:26:00 PM
Benzo(g,h,i)perylene	29.0	0.967		µg/L	1	5/1/2015 12:26:00 PM
Benzo(k)fluoranthene	12.5	0.967		µg/L	1	5/1/2015 12:26:00 PM
Benzoic Acid	ND	19.3		µg/L	1	5/1/2015 12:26:00 PM
Benzyl Alcohol	ND	4.84		µg/L	1	5/1/2015 12:26:00 PM
Bis(2-chloroethoxy)methane	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM
Bis(2-chloroethyl)ether	ND	1.93		µg/L	1	5/1/2015 12:26:00 PM
Bis(2-chloroisopropyl)ether	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM
Bis(2-ethylhexyl)phthalate	25.7	0.967		µg/L	1	5/1/2015 12:26:00 PM
Butyl benzyl phthalate	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM
Carbazole	5.80	0.967		µg/L	1	5/1/2015 12:26:00 PM
Chrysene	32.7	0.967		µg/L	1	5/1/2015 12:26:00 PM
Dibenz(a,h)anthracene	4.69	0.967		µg/L	1	5/1/2015 12:26:00 PM
Dibenzofuran	8.15	0.967		µg/L	1	5/1/2015 12:26:00 PM
Diethyl phthalate	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM
Dimethyl phthalate	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM
Di-n-butyl phthalate	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM
Di-n-octyl phthalate	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM
Fluoranthene	143	4.84		µg/L	5	5/1/2015 1:21:00 PM

# Specialty Analytical

Date Reported: 04-May-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08  
**Lab ID:** 1504254-001  
**Client Sample ID:** Totes-Comp-W

**Collection Date:** 4/30/2015 1:40:00 PM

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>SEMIVOLATILE ORGANICS-LOW LEVEL</b>		<b>SW8270D</b>		Analyst: <b>bda</b>		
Fluorene	62.5	0.967		µg/L	1	5/1/2015 12:26:00 PM
Hexachlorobenzene	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM
Hexachlorobutadiene	ND	1.93		µg/L	1	5/1/2015 12:26:00 PM
Hexachlorocyclopentadiene	ND	4.84		µg/L	1	5/1/2015 12:26:00 PM
Hexachloroethane	ND	1.93		µg/L	1	5/1/2015 12:26:00 PM
Indeno(1,2,3-cd)pyrene	18.4	0.967		µg/L	1	5/1/2015 12:26:00 PM
Isophorone	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM
Naphthalene	207	4.84		µg/L	5	5/1/2015 1:21:00 PM
Nitrobenzene	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM
N-Nitrosodimethylamine	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM
N-Nitrosodi-n-propylamine	ND	1.93		µg/L	1	5/1/2015 12:26:00 PM
N-Nitrosodiphenylamine	ND	0.967		µg/L	1	5/1/2015 12:26:00 PM
Pentachlorophenol	ND	4.84		µg/L	1	5/1/2015 12:26:00 PM
Phenanthrene	321	4.84		µg/L	5	5/1/2015 1:21:00 PM
Phenol	ND	1.93		µg/L	1	5/1/2015 12:26:00 PM
Pyrene	132	4.84		µg/L	5	5/1/2015 1:21:00 PM
Pyridine	ND	4.84		µg/L	1	5/1/2015 12:26:00 PM
Surr: 2,4,6-Tribromophenol	44.2	33.1-99.7		%REC	1	5/1/2015 12:26:00 PM
Surr: 2-Fluorobiphenyl	39.1	33.1-96.2		%REC	1	5/1/2015 12:26:00 PM
Surr: 2-Fluorophenol	13.7	13.4-57.1		%REC	1	5/1/2015 12:26:00 PM
Surr: 4-Terphenyl-d14	32.6	41-122	SMI	%REC	1	5/1/2015 12:26:00 PM
Surr: Nitrobenzene-d5	31.0	28.9-99.9		%REC	1	5/1/2015 12:26:00 PM
Surr: Phenol-d6	8.27	10.6-38.5	SMI	%REC	1	5/1/2015 12:26:00 PM
<b>VOLATILE ORGANICS BY GC/MS</b>		<b>SW8260B</b>		Analyst: <b>CK</b>		
1,1,1,2-Tetrachloroethane	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
1,1,1-Trichloroethane	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
1,1,2,2-Tetrachloroethane	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
1,1,2-Trichloroethane	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
1,1-Dichloroethane	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
1,1-Dichloroethene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
1,1-Dichloropropene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
1,2,3-Trichlorobenzene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
1,2,3-Trichloropropane	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
1,2,4-Trichlorobenzene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
1,2,4-Trimethylbenzene	2.45	1.00		µg/L	1	4/30/2015 8:16:00 PM
1,2-Dibromo-3-chloropropane	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
1,2-Dibromoethane	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM

# Specialty Analytical

Date Reported: 04-May-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08  
**Lab ID:** 1504254-001  
**Client Sample ID:** Totes-Comp-W

**Collection Date:** 4/30/2015 1:40:00 PM

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>VOLATILE ORGANICS BY GC/MS</b>		<b>SW8260B</b>				Analyst: <b>CK</b>
1,2-Dichlorobenzene	15.8	1.00		µg/L	1	4/30/2015 8:16:00 PM
1,2-Dichloroethane	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
1,2-Dichloropropane	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
1,3,5-Trimethylbenzene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
1,3-Dichlorobenzene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
1,3-Dichloropropane	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
1,4-Dichlorobenzene	3.23	1.00		µg/L	1	4/30/2015 8:16:00 PM
2,2-Dichloropropane	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
2-Butanone	ND	10.0		µg/L	1	4/30/2015 8:16:00 PM
2-Chlorotoluene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
2-Hexanone	ND	10.0		µg/L	1	4/30/2015 8:16:00 PM
4-Chlorotoluene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
4-Isopropyltoluene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
4-Methyl-2-pentanone	ND	20.0		µg/L	1	4/30/2015 8:16:00 PM
Acetone	ND	50.0		µg/L	1	4/30/2015 8:16:00 PM
Acrylonitrile	ND	5.00		µg/L	1	4/30/2015 8:16:00 PM
Benzene	0.840	0.300		µg/L	1	4/30/2015 8:16:00 PM
Bromobenzene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
Bromochloromethane	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
Bromodichloromethane	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
Bromoform	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
Bromomethane	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
Carbon disulfide	ND	2.00		µg/L	1	4/30/2015 8:16:00 PM
Carbon tetrachloride	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
Chlorobenzene	4.96	1.00		µg/L	1	4/30/2015 8:16:00 PM
Chloroethane	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
Chloroform	8.96	1.00		µg/L	1	4/30/2015 8:16:00 PM
Chloromethane	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
cis-1,2-Dichloroethene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
cis-1,3-Dichloropropene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
Dibromochloromethane	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
Dibromomethane	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
Dichlorodifluoromethane	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
Ethylbenzene	1.95	1.00		µg/L	1	4/30/2015 8:16:00 PM
Hexachlorobutadiene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
Isopropylbenzene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
m,p-Xylene	ND	2.00		µg/L	1	4/30/2015 8:16:00 PM
Methyl tert-butyl ether	2.94	1.00		µg/L	1	4/30/2015 8:16:00 PM
Methylene chloride	ND	20.0		µg/L	1	4/30/2015 8:16:00 PM

# Specialty Analytical

Date Reported: 04-May-15

**CLIENT:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08  
**Lab ID:** 1504254-001  
**Client Sample ID:** Totes-Comp-W

**Collection Date:** 4/30/2015 1:40:00 PM

**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>VOLATILE ORGANICS BY GC/MS</b>		<b>SW8260B</b>		Analyst: <b>CK</b>		
Naphthalene	528	10.0		µg/L	10	5/1/2015 10:01:00 AM
n-Butylbenzene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
n-Propylbenzene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
o-Xylene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
sec-Butylbenzene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
Styrene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
tert-Butylbenzene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
Tetrachloroethene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
Toluene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
trans-1,3-Dichloropropene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
Trichloroethene	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
Trichlorofluoromethane	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
Vinyl chloride	ND	1.00		µg/L	1	4/30/2015 8:16:00 PM
Surr: 1,2-Dichloroethane-d4	98.4	85.3-116		%REC	1	4/30/2015 8:16:00 PM
Surr: 4-Bromofluorobenzene	108	88.1-120		%REC	1	4/30/2015 8:16:00 PM
Surr: Dibromofluoromethane	98.9	94.2-122		%REC	1	4/30/2015 8:16:00 PM
Surr: Toluene-d8	86.9	86.2-135		%REC	1	4/30/2015 8:16:00 PM
<b>CYANIDE, TOTAL</b>		<b>E335.4</b>		Analyst: <b>EFH</b>		
Cyanide	0.0176	0.0100		mg/L	1	5/1/2015 10:28:09 AM

# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 6020\_TCLP

Sample ID: <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020_TCLP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>20046</b>						
Client ID: <b>ICV</b>	Batch ID: <b>9367</b>	TestNo: <b>E1311/6020</b>	<b>SW3010A</b>	Analysis Date: <b>5/4/2015</b>	SeqNo: <b>267175</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	50.2	0.100	50.00	0	100	90	110				
Barium, TCLP	50.3	1.00	50.00	0	101	90	110				
Cadmium, TCLP	50.4	0.100	50.00	0	101	90	110				
Chromium, TCLP	51.6	0.100	50.00	0	103	90	110				
Lead, TCLP	48.1	0.100	50.00	0	96.3	90	110				
Selenium, TCLP	51.1	1.00	50.00	0	102	90	110				
Silver, TCLP	50.1	0.100	50.00	0	100	90	110				

Sample ID: <b>MB-9367</b>	SampType: <b>MBLK</b>	TestCode: <b>6020_TCLP</b>	Units: <b>µg/L</b>	Prep Date: <b>5/1/2015</b>	RunNo: <b>20046</b>						
Client ID: <b>PBW</b>	Batch ID: <b>9367</b>	TestNo: <b>E1311/6020</b>	<b>SW3010A</b>	Analysis Date: <b>5/4/2015</b>	SeqNo: <b>267176</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	ND	0.100									
Barium, TCLP	ND	1.00									
Cadmium, TCLP	ND	0.100									
Chromium, TCLP	ND	0.100									
Lead, TCLP	ND	0.100									
Selenium, TCLP	ND	1.00									
Silver, TCLP	ND	0.100									

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank O RSD is greater than RSDlimit	H Holding times for preparation or analysis exceeded R RPD outside accepted recovery limits	ND Not Detected at the Reporting Limit S Spike Recovery outside accepted reco	Page 1 of 27
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# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 6020\_TCLP

Sample ID: <b>LCS-9367</b>	SampType: <b>LCS</b>	TestCode: <b>6020_TCLP</b>	Units: <b>µg/L</b>	Prep Date: <b>5/1/2015</b>	RunNo: <b>20046</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>9367</b>	TestNo: <b>E1311/6020</b>	<b>SW3010A</b>	Analysis Date: <b>5/4/2015</b>	SeqNo: <b>267178</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	49.7	0.100	50.00	0	99.5	80	120				
Barium, TCLP	52.9	1.00	50.00	0	106	80	120				
Cadmium, TCLP	51.9	0.100	50.00	0	104	80	120				
Chromium, TCLP	52.0	0.100	50.00	0	104	80	120				
Lead, TCLP	49.9	0.100	50.00	0	99.8	80	120				
Selenium, TCLP	49.8	1.00	50.00	0	99.7	80	120				
Silver, TCLP	50.6	0.100	50.00	0	101	80	120				

Sample ID: <b>CCV</b>	SampType: <b>CCV</b>	TestCode: <b>6020_TCLP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>20046</b>						
Client ID: <b>CCV</b>	Batch ID: <b>9367</b>	TestNo: <b>E1311/6020</b>	<b>SW3010A</b>	Analysis Date: <b>5/4/2015</b>	SeqNo: <b>267248</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	48.9	0.100	50.00	0	97.8	90	110				
Barium, TCLP	50.6	1.00	50.00	0	101	90	110				
Cadmium, TCLP	50.4	0.100	50.00	0	101	90	110				
Chromium, TCLP	49.4	0.100	50.00	0	98.8	90	110				
Lead, TCLP	48.0	0.100	50.00	0	96.1	90	110				
Selenium, TCLP	48.4	1.00	50.00	0	96.9	90	110				
Silver, TCLP	50.2	0.100	50.00	0	100	90	110				

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank	H Holding times for preparation or analysis exceeded	ND Not Detected at the Reporting Limit
	O RSD is greater than RSDlimit	R RPD outside accepted recovery limits	S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 6020\_TCLP

Sample ID: <b>A1504255-001BMS</b>	SampType: <b>MS</b>	TestCode: <b>6020_TCLP</b>	Units: <b>µg/L</b>	Prep Date: <b>5/1/2015</b>	RunNo: <b>20046</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>9367</b>	TestNo: <b>E1311/6020</b>	<b>SW3010A</b>	Analysis Date: <b>5/4/2015</b>	SeqNo: <b>267251</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	58.8	1.00	50.00	1.015	116	70	130				
Barium, TCLP	130	10.0	50.00	7.877	244	70	130				SMC
Cadmium, TCLP	52.5	1.00	50.00	0	105	70	130				
Chromium, TCLP	52.3	1.00	50.00	0.05485	105	70	130				
Lead, TCLP	50.1	1.00	50.00	0.01489	100	70	130				
Selenium, TCLP	43.3	10.0	50.00	0.06447	86.5	70	130				
Silver, TCLP	50.8	1.00	50.00	0.006811	102	70	130				

Sample ID: <b>A1504255-001BMSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_TCLP</b>	Units: <b>µg/L</b>	Prep Date: <b>5/1/2015</b>	RunNo: <b>20046</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>9367</b>	TestNo: <b>E1311/6020</b>	<b>SW3010A</b>	Analysis Date: <b>5/4/2015</b>	SeqNo: <b>267252</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	58.3	1.00	50.00	1.015	114	70	130	58.81	0.940	20	
Barium, TCLP	135	10.0	50.00	7.877	254	70	130	130.0	3.85	20	SMC
Cadmium, TCLP	54.0	1.00	50.00	0	108	70	130	52.51	2.76	20	
Chromium, TCLP	52.5	1.00	50.00	0.05485	105	70	130	52.34	0.305	20	
Lead, TCLP	52.6	1.00	50.00	0.01489	105	70	130	50.09	4.81	20	
Selenium, TCLP	42.3	10.0	50.00	0.06447	84.5	70	130	43.29	2.27	20	
Silver, TCLP	52.4	1.00	50.00	0.006811	105	70	130	50.79	3.06	20	

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank O RSD is greater than RSDlimit	H Holding times for preparation or analysis exceeded R RPD outside accepted recovery limits	ND Not Detected at the Reporting Limit S Spike Recovery outside accepted reco	Page 3 of 27
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# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 6020\_TCLP

Sample ID: <b>A1504255-001BDUP</b>	SampType: <b>DUP</b>	TestCode: <b>6020_TCLP</b>	Units: <b>µg/L</b>	Prep Date: <b>5/1/2015</b>	RunNo: <b>20046</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>9367</b>	TestNo: <b>E1311/6020</b>	<b>SW3010A</b>	Analysis Date: <b>5/4/2015</b>	SeqNo: <b>267254</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	0.952	0.100						1.015	6.46	20	
Barium, TCLP	7.96	1.00						7.877	1.09	20	
Cadmium, TCLP	ND	0.100						0	0	20	
Chromium, TCLP	ND	0.100						0	0	20	RF
Lead, TCLP	ND	0.100						0	0	20	RF
Selenium, TCLP	ND	1.00						0	0	20	RF
Silver, TCLP	ND	0.100						0	0	20	RF

Sample ID: <b>CCV</b>	SampType: <b>CCV</b>	TestCode: <b>6020_TCLP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>20046</b>						
Client ID: <b>CCV</b>	Batch ID: <b>9367</b>	TestNo: <b>E1311/6020</b>	<b>SW3010A</b>	Analysis Date: <b>5/4/2015</b>	SeqNo: <b>267255</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	48.9	0.100	50.00	0	97.8	90	110				
Barium, TCLP	49.5	1.00	50.00	0	99.0	90	110				
Cadmium, TCLP	49.3	0.100	50.00	0	98.5	90	110				
Chromium, TCLP	51.6	0.100	50.00	0	103	90	110				
Lead, TCLP	47.1	0.100	50.00	0	94.3	90	110				
Selenium, TCLP	47.1	1.00	50.00	0	94.3	90	110				
Silver, TCLP	49.3	0.100	50.00	0	98.6	90	110				

**Qualifiers:** B Analyte detected in the associated Method Blank      H Holding times for preparation or analysis exceeded      ND Not Detected at the Reporting Limit      Page 4 of 27  
O RSD is greater than RSDlimit      R RPD outside accepted recovery limits      S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8260\_W

Sample ID: <b>CCV MSVWS-2021</b>	SampType: <b>CCV</b>	TestCode: <b>8260_W</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>20049</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R20049</b>	TestNo: <b>SW8260B</b>		Analysis Date: <b>4/30/2015</b>	SeqNo: <b>267075</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	37.0	1.00	40.00	0	92.5	80	120				
1,2-Dichloropropane	39.3	1.00	40.00	0	98.2	80	120				
Chloroform	37.3	1.00	40.00	0	93.3	80	120				
Ethylbenzene	41.2	1.00	40.00	0	103	80	120				
Toluene	36.3	1.00	40.00	0	90.7	80	120				
Vinyl chloride	37.8	1.00	40.00	0	94.4	80	120				

Sample ID: <b>LCS MSVWS-2022</b>	SampType: <b>LCS</b>	TestCode: <b>8260_W</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>20049</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>R20049</b>	TestNo: <b>SW8260B</b>		Analysis Date: <b>4/30/2015</b>	SeqNo: <b>267076</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	43.5	1.00	40.00	0	109	61.2	135				
Benzene	39.1	0.300	40.00	0	97.8	76.8	125				
Chlorobenzene	38.4	1.00	40.00	0	96.1	84.1	116				
Toluene	34.4	1.00	40.00	0	86.1	82	122				
Trichloroethene	39.0	1.00	40.00	0	97.5	68.5	124				

Sample ID: <b>MB</b>	SampType: <b>MBLK</b>	TestCode: <b>8260_W</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>20049</b>						
Client ID: <b>PBW</b>	Batch ID: <b>R20049</b>	TestNo: <b>SW8260B</b>		Analysis Date: <b>4/30/2015</b>	SeqNo: <b>267077</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	1.00									
1,1,1-Trichloroethane	ND	1.00									

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank O RSD is greater than RSDlimit	H Holding times for preparation or analysis exceeded R RPD outside accepted recovery limits	ND Not Detected at the Reporting Limit S Spike Recovery outside accepted reco	Page 5 of 27
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# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8260\_W

Sample ID: <b>MB</b>	SampType: <b>MBLK</b>	TestCode: <b>8260_W</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>20049</b>						
Client ID: <b>PBW</b>	Batch ID: <b>R20049</b>	TestNo: <b>SW8260B</b>		Analysis Date: <b>4/30/2015</b>	SeqNo: <b>267077</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,2,2-Tetrachloroethane	ND	1.00									
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.00									
1,1,2-Trichloroethane	ND	1.00									
1,1-Dichloroethane	ND	1.00									
1,1-Dichloroethene	ND	1.00									
1,1-Dichloropropene	ND	1.00									
1,2,3-Trichlorobenzene	ND	1.00									
1,2,3-Trichloropropane	ND	1.00									
1,2,4-Trichlorobenzene	ND	1.00									
1,2,4-Trimethylbenzene	ND	1.00									
1,2-Dibromo-3-chloropropane	ND	1.00									
1,2-Dibromoethane	ND	1.00									
1,2-Dichlorobenzene	ND	1.00									
1,2-Dichloroethane	ND	1.00									
1,2-Dichloropropane	ND	1.00									
1,3,5-Trimethylbenzene	ND	1.00									
1,3-Dichlorobenzene	ND	1.00									
1,3-Dichloropropane	ND	1.00									
1,4-Dichlorobenzene	ND	1.00									
2,2-Dichloropropane	ND	1.00									
2-Butanone	ND	10.0									
2-Chlorotoluene	ND	1.00									
2-Hexanone	ND	10.0									
4-Chlorotoluene	ND	1.00									
4-Isopropyltoluene	ND	1.00									
4-Methyl-2-pentanone	ND	20.0									

**Qualifiers:** B Analyte detected in the associated Method Blank H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit  
 O RSD is greater than RSDlimit R RPD outside accepted recovery limits S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8260\_W

Sample ID: <b>MB</b>	SampType: <b>MBLK</b>	TestCode: <b>8260_W</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>20049</b>						
Client ID: <b>PBW</b>	Batch ID: <b>R20049</b>	TestNo: <b>SW8260B</b>		Analysis Date: <b>4/30/2015</b>	SeqNo: <b>267077</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acetone	ND	50.0									
Acrylonitrile	ND	5.00									
Benzene	ND	0.300									
Bromobenzene	ND	1.00									
Bromochloromethane	ND	1.00									
Bromodichloromethane	ND	1.00									
Bromoform	ND	1.00									
Bromomethane	ND	1.00									
Carbon disulfide	ND	2.00									
Carbon tetrachloride	ND	1.00									
Chlorobenzene	ND	1.00									
Chloroethane	ND	1.00									
Chloroform	ND	1.00									
Chloromethane	ND	1.00									
cis-1,2-Dichloroethene	ND	1.00									
cis-1,3-Dichloropropene	ND	1.00									
Dibromochloromethane	ND	1.00									
Dibromomethane	ND	1.00									
Dichlorodifluoromethane	ND	1.00									
Ethylbenzene	ND	1.00									
Hexachlorobutadiene	ND	1.00									
Isopropylbenzene	ND	1.00									
m,p-Xylene	ND	2.00									
Methyl tert-butyl ether	ND	1.00									
Methylene chloride	ND	20.0									
Naphthalene	ND	1.00									

**Qualifiers:** B Analyte detected in the associated Method Blank H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit Page 7 of 27  
O RSD is greater than RSDlimit R RPD outside accepted recovery limits S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8260\_W

Sample ID: <b>MB</b>	SampType: <b>MBLK</b>	TestCode: <b>8260_W</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>20049</b>						
Client ID: <b>PBW</b>	Batch ID: <b>R20049</b>	TestNo: <b>SW8260B</b>		Analysis Date: <b>4/30/2015</b>	SeqNo: <b>267077</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
n-Butylbenzene	ND	1.00									
n-Propylbenzene	ND	1.00									
o-Xylene	ND	1.00									
sec-Butylbenzene	ND	1.00									
Styrene	ND	1.00									
tert-Butylbenzene	ND	1.00									
Tetrachloroethene	ND	1.00									
Toluene	ND	1.00									
trans-1,2-Dichloroethene	ND	1.00									
trans-1,3-Dichloropropene	ND	1.00									
Trichloroethene	ND	1.00									
Trichlorofluoromethane	ND	1.00									
Vinyl chloride	ND	1.00									
Surr: 1,2-Dichloroethane-d4	104		100.0		104	85.3	116				
Surr: 4-Bromofluorobenzene	91.4		100.0		91.4	88.1	120				
Surr: Dibromofluoromethane	100		100.0		100	94.2	122				
Surr: Toluene-d8	88.6		100.0		88.6	86.2	135				

Sample ID: <b>CCV MSVWS-2021</b>	SampType: <b>CCV</b>	TestCode: <b>8260_W</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>20049</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R20049</b>	TestNo: <b>SW8260B</b>		Analysis Date: <b>5/1/2015</b>	SeqNo: <b>267079</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	46.9	1.00	40.00	0	117	80	120				
1,2-Dichloropropane	38.6	1.00	40.00	0	96.6	80	120				

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank O RSD is greater than RSDlimit	H Holding times for preparation or analysis exceeded R RPD outside accepted recovery limits	ND Not Detected at the Reporting Limit S Spike Recovery outside accepted reco	Page 8 of 27
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# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8260\_W

Sample ID: <b>CCV MSVWS-2021</b>		SampType: <b>CCV</b>		TestCode: <b>8260_W</b>		Units: <b>µg/L</b>		Prep Date:		RunNo: <b>20049</b>	
Client ID: <b>CCV</b>		Batch ID: <b>R20049</b>		TestNo: <b>SW8260B</b>		Analysis Date: <b>5/1/2015</b>				SeqNo: <b>267079</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloroform	45.0	1.00	40.00	0	112	80	120				
Ethylbenzene	46.0	1.00	40.00	0	115	80	120				
Toluene	40.0	1.00	40.00	0	100	80	120				
Vinyl chloride	33.9	1.00	40.00	0	84.7	80	120				

Sample ID: <b>A1504255-001DMS</b>		SampType: <b>MS</b>		TestCode: <b>8260_W</b>		Units: <b>µg/L</b>		Prep Date:		RunNo: <b>20049</b>	
Client ID: <b>ZZZZZ</b>		Batch ID: <b>R20049</b>		TestNo: <b>SW8260B</b>		Analysis Date: <b>5/1/2015</b>				SeqNo: <b>267080</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	11400	250	10000	0	114	47.8	165				
Benzene	11300	75.0	10000	782.5	106	74.1	136				
Chlorobenzene	11800	250	10000	0	118	70.7	133				
Toluene	10600	250	10000	52.50	105	68.4	135				
Trichloroethene	9670	250	10000	0	96.7	50.8	164				

Sample ID: <b>A1504255-001DMSD</b>		SampType: <b>MSD</b>		TestCode: <b>8260_W</b>		Units: <b>µg/L</b>		Prep Date:		RunNo: <b>20049</b>	
Client ID: <b>ZZZZZ</b>		Batch ID: <b>R20049</b>		TestNo: <b>SW8260B</b>		Analysis Date: <b>5/1/2015</b>				SeqNo: <b>267081</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	11700	250	10000	0	117	47.8	165	11440	2.55	20	
Benzene	11700	75.0	10000	782.5	109	74.1	136	11350	3.25	20	
Chlorobenzene	11700	250	10000	0	117	70.7	133	11760	0.661	20	
Toluene	10500	250	10000	52.50	105	68.4	135	10560	0.475	20	

**Qualifiers:** B Analyte detected in the associated Method Blank      H Holding times for preparation or analysis exceeded      ND Not Detected at the Reporting Limit      Page 9 of 27  
O RSD is greater than RSDlimit      R RPD outside accepted recovery limits      S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8260\_W

Sample ID: <b>A1504255-001DMSD</b>	SampType: <b>MSD</b>	TestCode: <b>8260_W</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>20049</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R20049</b>	TestNo: <b>SW8260B</b>		Analysis Date: <b>5/1/2015</b>	SeqNo: <b>267081</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene	9520	250	10000	0	95.2	50.8	164	9668	1.54	20	

Sample ID: <b>CCB</b>	SampType: <b>CCB</b>	TestCode: <b>8260_W</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>20049</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R20049</b>	TestNo: <b>SW8260B</b>		Analysis Date: <b>5/1/2015</b>	SeqNo: <b>267082</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	1.00									
1,1,1-Trichloroethane	ND	1.00									
1,1,2,2-Tetrachloroethane	ND	1.00									
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.00									
1,1,2-Trichloroethane	ND	1.00									
1,1-Dichloroethane	ND	1.00									
1,1-Dichloroethane	ND	1.00									
1,1-Dichloropropene	ND	1.00									
1,2,3-Trichlorobenzene	ND	1.00									
1,2,3-Trichloropropane	ND	1.00									
1,2,4-Trichlorobenzene	ND	1.00									
1,2,4-Trimethylbenzene	ND	1.00									
1,2-Dibromo-3-chloropropane	ND	1.00									
1,2-Dibromoethane	ND	1.00									
1,2-Dichlorobenzene	ND	1.00									
1,2-Dichloroethane	ND	1.00									
1,2-Dichloropropane	ND	1.00									
1,3,5-Trimethylbenzene	ND	1.00									

**Qualifiers:** B Analyte detected in the associated Method Blank H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit Page 10 of 27  
O RSD is greater than RSDlimit R RPD outside accepted recovery limits S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8260\_W

Sample ID: CCB	SampType: CCB	TestCode: 8260_W	Units: µg/L	Prep Date:	RunNo: 20049						
Client ID: CCB	Batch ID: R20049	TestNo: SW8260B		Analysis Date: 5/1/2015	SeqNo: 267082						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,3-Dichlorobenzene	ND	1.00									
1,3-Dichloropropane	ND	1.00									
1,4-Dichlorobenzene	ND	1.00									
2,2-Dichloropropane	ND	1.00									
2-Butanone	ND	10.0									
2-Chlorotoluene	ND	1.00									
2-Hexanone	ND	10.0									
4-Chlorotoluene	ND	1.00									
4-Isopropyltoluene	ND	1.00									
4-Methyl-2-pentanone	ND	20.0									
Acetone	ND	50.0									
Acrylonitrile	ND	5.00									
Benzene	ND	0.300									
Bromobenzene	ND	1.00									
Bromochloromethane	ND	1.00									
Bromodichloromethane	ND	1.00									
Bromoform	ND	1.00									
Bromomethane	ND	1.00									
Carbon disulfide	ND	2.00									
Carbon tetrachloride	ND	1.00									
Chlorobenzene	ND	1.00									
Chloroethane	ND	1.00									
Chloroform	ND	1.00									
Chloromethane	ND	1.00									
cis-1,2-Dichloroethene	ND	1.00									
cis-1,3-Dichloropropene	ND	1.00									

**Qualifiers:** B Analyte detected in the associated Method Blank H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit  
 O RSD is greater than RSDlimit R RPD outside accepted recovery limits S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8260\_W

Sample ID: CCB	SampType: CCB	TestCode: 8260_W	Units: µg/L	Prep Date:	RunNo: 20049						
Client ID: CCB	Batch ID: R20049	TestNo: SW8260B		Analysis Date: 5/1/2015	SeqNo: 267082						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromochloromethane	ND	1.00									
Dibromomethane	ND	1.00									
Dichlorodifluoromethane	ND	1.00									
Ethylbenzene	ND	1.00									
Hexachlorobutadiene	ND	1.00									
Isopropylbenzene	ND	1.00									
m,p-Xylene	ND	2.00									
Methyl tert-butyl ether	ND	1.00									
Methylene chloride	ND	20.0									
Naphthalene	ND	1.00									
n-Butylbenzene	ND	1.00									
n-Propylbenzene	ND	1.00									
o-Xylene	ND	1.00									
sec-Butylbenzene	ND	1.00									
Styrene	ND	1.00									
tert-Butylbenzene	ND	1.00									
Tetrachloroethene	ND	1.00									
Toluene	ND	1.00									
trans-1,2-Dichloroethene	ND	1.00									
trans-1,3-Dichloropropene	ND	1.00									
Trichloroethene	ND	1.00									
Trichlorofluoromethane	ND	1.00									
Vinyl chloride	ND	1.00									
Surr: 1,2-Dichloroethane-d4	94.4		100.0		94.4	85.3	116				
Surr: 4-Bromofluorobenzene	96.2		100.0		96.2	88.1	120				
Surr: Dibromofluoromethane	95.2		100.0		95.2	94.2	122				

**Qualifiers:** B Analyte detected in the associated Method Blank H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit  
 O RSD is greater than RSDlimit R RPD outside accepted recovery limits S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8260\_W

Sample ID: <b>CCB</b>	SampType: <b>CCB</b>	TestCode: <b>8260_W</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>20049</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R20049</b>	TestNo: <b>SW8260B</b>		Analysis Date: <b>5/1/2015</b>	SeqNo: <b>267082</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Toluene-d8	91.8		100.0		91.8	86.2	135				

**Qualifiers:** B Analyte detected in the associated Method Blank H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit  
O RSD is greater than RSDlimit R RPD outside accepted recovery limits S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8270LL\_W

Sample ID: <b>CCV-9356</b>	SampType: <b>CCV</b>	TestCode: <b>8270LL_W</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>20030</b>						
Client ID: <b>CCV</b>	Batch ID: <b>9356</b>	TestNo: <b>SW8270D</b>	<b>SW 3510C</b>	Analysis Date: <b>5/1/2015</b>	SeqNo: <b>266843</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,4-Dichlorobenzene	43.8	1.00	40.00	0	109	80	120				
2,4,6-Trichlorophenol	37.0	5.00	40.00	0	92.6	80	120				
2,4-Dichlorophenol	40.8	3.00	40.00	0	102	80	120				
2-Nitrophenol	32.6	5.00	40.00	0	81.6	80	120				
4-Chloro-3-methylphenol	32.6	2.00	40.00	0	81.4	80	120				
Acenaphthene	45.8	1.00	40.00	0	115	80	120				
Benzo(a)pyrene	47.1	1.00	40.00	0	118	80	120				
Di-n-octyl phthalate	44.3	1.00	40.00	0	111	80	120				
Fluoranthene	42.7	1.00	40.00	0	107	80	120				
Hexachlorobutadiene	42.5	2.00	40.00	0	106	80	120				
N-Nitrosodiphenylamine	47.0	1.00	40.00	0	117	80	120				
Pentachlorophenol	33.0	5.00	40.00	0	82.4	80	120				
Phenol	39.8	2.00	40.00	0	99.6	80	120				

Sample ID: <b>LCS-9356</b>	SampType: <b>LCS</b>	TestCode: <b>8270LL_W</b>	Units: <b>µg/L</b>	Prep Date: <b>4/30/2015</b>	RunNo: <b>20030</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>9356</b>	TestNo: <b>SW8270D</b>	<b>SW 3510C</b>	Analysis Date: <b>5/1/2015</b>	SeqNo: <b>266844</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	41.0	1.00	50.00	0	81.9	42.4	104				
1,4-Dichlorobenzene	35.4	1.00	50.00	0	70.9	37.9	105				
2,4-Dinitrotoluene	34.0	5.00	50.00	0	67.9	52.9	133				
2-Chlorophenol	32.8	1.00	50.00	0	65.7	27.8	118				
4-Chloro-3-methylphenol	35.5	2.00	50.00	0	70.9	33.5	129				
4-Nitrophenol	17.2	5.00	50.00	0	34.4	11.4	49.1				

**Qualifiers:** B Analyte detected in the associated Method Blank      H Holding times for preparation or analysis exceeded      ND Not Detected at the Reporting Limit      Page 14 of 27  
O RSD is greater than RSDlimit      R RPD outside accepted recovery limits      S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8270LL\_W

Sample ID:	SampType:	TestCode:	Units:	Prep Date:	RunNo:						
LCS-9356	LCS	8270LL_W	µg/L	4/30/2015	20030						
Client ID:	Batch ID:	TestNo:		Analysis Date:	SeqNo:						
LCSW	9356	SW8270D	SW 3510C	5/1/2015	266844						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	41.4	1.00	50.00	0	82.8	42.4	124				
N-Nitrosodi-n-propylamine	53.7	2.00	50.00	0	107	33.9	138				
Pentachlorophenol	23.3	5.00	50.00	0	46.5	43.3	113				
Phenol	14.2	2.00	50.00	0	28.5	6.73	54.7				
Pyrene	35.0	1.00	50.00	0	70.1	59.4	119				

Sample ID:	SampType:	TestCode:	Units:	Prep Date:	RunNo:						
LCSD-9356	LCSD	8270LL_W	µg/L	4/30/2015	20030						
Client ID:	Batch ID:	TestNo:		Analysis Date:	SeqNo:						
LCSS02	9356	SW8270D	SW 3510C	5/1/2015	266845						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	32.4	1.00	50.00	0	64.8	42.4	104	40.96	23.4	20	R
1,4-Dichlorobenzene	32.1	1.00	50.00	0	64.2	37.9	105	35.44	9.83	20	
2,4-Dinitrotoluene	32.3	5.00	50.00	0	64.7	52.9	133	33.97	4.92	20	
2-Chlorophenol	28.6	1.00	50.00	0	57.2	27.8	118	32.84	13.8	20	
4-Chloro-3-methylphenol	25.2	2.00	50.00	0	50.3	33.5	129	35.47	34.0	20	R
4-Nitrophenol	13.6	5.00	50.00	0	27.2	11.4	49.1	17.21	23.5	20	R
Acenaphthene	37.3	1.00	50.00	0	74.6	42.4	124	41.41	10.4	20	
N-Nitrosodi-n-propylamine	43.0	2.00	50.00	0	86.0	33.9	138	53.73	22.2	20	R
Pentachlorophenol	23.7	5.00	50.00	0	47.4	43.3	113	23.27	1.87	20	
Phenol	11.8	2.00	50.00	0	23.5	6.73	54.7	14.24	19.1	20	
Pyrene	30.6	1.00	50.00	0	61.2	59.4	119	35.04	13.5	20	

**Qualifiers:** B Analyte detected in the associated Method Blank H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit  
O RSD is greater than RSDlimit R RPD outside accepted recovery limits S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8270LL\_W

Sample ID: MB-9356	SampType: MBLK	TestCode: 8270LL_W	Units: µg/L	Prep Date: 4/30/2015	RunNo: 20030						
Client ID: PBW	Batch ID: 9356	TestNo: SW8270D SW 3510C		Analysis Date: 5/1/2015	SeqNo: 266846						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	ND	1.00									
1,2-Dichlorobenzene	ND	1.00									
1,2-Diphenylhydrazine	ND	5.00									
1,3-Dichlorobenzene	ND	1.00									
1,4-Dichlorobenzene	ND	1.00									
1-Methylnaphthalene	ND	1.00									
2,3,4-Trichlorophenol	ND	1.00									
2,3,5,6-Tetrachlorophenol	ND	5.00									
2,3,5-Trichlorophenol	ND	1.00									
2,3,6-Trichlorophenol	ND	1.00									
2,4,5-Trichlorophenol	ND	5.00									
2,4,6-Trichlorophenol	ND	5.00									
2,4-Dichlorophenol	ND	3.00									
2,4-Dimethylphenol	ND	1.00									
2,4-Dinitrophenol	ND	10.0									
2,4-Dinitrotoluene	ND	5.00									
2,6-Dinitrotoluene	ND	5.00									
2-Chloronaphthalene	ND	1.00									
2-Chlorophenol	ND	1.00									
2-Methylnaphthalene	ND	1.00									
2-Methylphenol	ND	2.00									
2-Nitroaniline	ND	5.00									
2-Nitrophenol	ND	5.00									
3-&4-Methylphenol	ND	10.0									
3,3'-Dichlorobenzidine	ND	5.00									
3-Nitroaniline	ND	6.00									

**Qualifiers:** B Analyte detected in the associated Method Blank H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit Page 16 of 27  
O RSD is greater than RSDlimit R RPD outside accepted recovery limits S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8270LL\_W

Sample ID: <b>MB-9356</b>	SampType: <b>MBLK</b>	TestCode: <b>8270LL_W</b>	Units: <b>µg/L</b>	Prep Date: <b>4/30/2015</b>	RunNo: <b>20030</b>						
Client ID: <b>PBW</b>	Batch ID: <b>9356</b>	TestNo: <b>SW8270D</b>	<b>SW 3510C</b>	Analysis Date: <b>5/1/2015</b>	SeqNo: <b>266846</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4,6-Dinitro-2-methylphenol	ND	10.0									
4-Bromophenyl phenyl ether	ND	1.00									
4-Chloro-3-methylphenol	ND	2.00									
4-Chloroaniline	ND	3.00									
4-Chlorophenyl phenyl ether	ND	1.00									
4-Nitroaniline	ND	5.00									
4-Nitrophenol	ND	5.00									
Acenaphthene	ND	1.00									
Acenaphthylene	ND	1.00									
Anthracene	ND	1.00									
Benz(a)anthracene	ND	1.00									
Benzo(a)pyrene	ND	1.00									
Benzo(b)fluoranthene	ND	1.00									
Benzo(g,h,i)perylene	ND	1.00									
Benzo(k)fluoranthene	ND	1.00									
Benzoic Acid	ND	20.0									
Benzyl Alcohol	ND	5.00									
Bis(2-chloroethoxy)methane	ND	1.00									
Bis(2-chloroethyl)ether	ND	2.00									
Bis(2-chloroisopropyl)ether	ND	1.00									
Bis(2-ethylhexyl)phthalate	ND	1.00									
Butyl benzyl phthalate	ND	1.00									
Carbazole	ND	1.00									
Chrysene	ND	1.00									
Dibenz(a,h)anthracene	ND	1.00									
Dibenzofuran	ND	1.00									

**Qualifiers:** B Analyte detected in the associated Method Blank H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit Page 17 of 27  
O RSD is greater than RSDlimit R RPD outside accepted recovery limits S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8270LL\_W

Sample ID: MB-9356	SampType: MBLK	TestCode: 8270LL_W	Units: µg/L	Prep Date: 4/30/2015	RunNo: 20030						
Client ID: PBW	Batch ID: 9356	TestNo: SW8270D SW 3510C		Analysis Date: 5/1/2015	SeqNo: 266846						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diethyl phthalate	ND	1.00									
Dimethyl phthalate	ND	1.00									
Di-n-butyl phthalate	ND	1.00									
Di-n-octyl phthalate	ND	1.00									
Fluoranthene	ND	1.00									
Fluorene	ND	1.00									
Hexachlorobenzene	ND	1.00									
Hexachlorobutadiene	ND	2.00									
Hexachlorocyclopentadiene	ND	5.00									
Hexachloroethane	ND	2.00									
Indeno(1,2,3-cd)pyrene	ND	1.00									
Isophorone	ND	1.00									
Naphthalene	ND	1.00									
Nitrobenzene	ND	1.00									
N-Nitrosodimethylamine	ND	1.00									
N-Nitrosodi-n-propylamine	ND	2.00									
N-Nitrosodiphenylamine	ND	1.00									
Pentachlorophenol	ND	5.00									
Phenanthrene	ND	1.00									
Phenol	ND	2.00									
Pyrene	ND	1.00									
Pyridine	ND	5.00									
Surr: 2,4,6-Tribromophenol	108		100.0		108	33.1	99.7				S
Surr: 2-Fluorobiphenyl	74.6		100.0		74.6	33.1	96.2				
Surr: 2-Fluorophenol	35.1		100.0		35.1	13.4	57.1				
Surr: 4-Terphenyl-d14	86.2		100.0		86.2	41	122				

**Qualifiers:** B Analyte detected in the associated Method Blank H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit Page 18 of 27  
O RSD is greater than RSDlimit R RPD outside accepted recovery limits S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** 8270LL\_W

Sample ID: <b>MB-9356</b>	SampType: <b>MBLK</b>	TestCode: <b>8270LL_W</b>	Units: <b>µg/L</b>	Prep Date: <b>4/30/2015</b>	RunNo: <b>20030</b>						
Client ID: <b>PBW</b>	Batch ID: <b>9356</b>	TestNo: <b>SW8270D</b>	<b>SW 3510C</b>	Analysis Date: <b>5/1/2015</b>	SeqNo: <b>266846</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	97.1		100.0		97.1	28.9	99.9				
Surr: Phenol-d6	23.0		100.0		23.0	10.6	38.5				

**Qualifiers:** B Analyte detected in the associated Method Blank H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit  
O RSD is greater than RSDlimit R RPD outside accepted recovery limits S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** CN\_W

Sample ID: <b>R20028ICV</b>	SampType: <b>ICV</b>	TestCode: <b>CN_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>20028</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R20028</b>	TestNo: <b>E335.4</b>		Analysis Date: <b>5/1/2015</b>	SeqNo: <b>266808</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Cyanide 0.298 0.0100 0.3000 0 99.2 90 110

Sample ID: <b>MB-R20028</b>	SampType: <b>MBLK</b>	TestCode: <b>CN_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>20028</b>						
Client ID: <b>PBW</b>	Batch ID: <b>R20028</b>	TestNo: <b>E335.4</b>		Analysis Date: <b>5/1/2015</b>	SeqNo: <b>266809</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Cyanide ND 0.0100

Sample ID: <b>LCS-R20028</b>	SampType: <b>LCS</b>	TestCode: <b>CN_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>20028</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>R20028</b>	TestNo: <b>E335.4</b>		Analysis Date: <b>5/1/2015</b>	SeqNo: <b>266810</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Cyanide 0.201 0.0100 0.2000 0 101 80 120

Sample ID: <b>R20028CCV</b>	SampType: <b>CCV</b>	TestCode: <b>CN_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>20028</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R20028</b>	TestNo: <b>E335.4</b>		Analysis Date: <b>5/1/2015</b>	SeqNo: <b>266811</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Cyanide 0.338 0.0100 0.3500 0 96.7 90 110

**Qualifiers:** B Analyte detected in the associated Method Blank H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit Page 20 of 27  
O RSD is greater than RSDlimit R RPD outside accepted recovery limits S Spike Recovery outside accepted reco



# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** HG\_CT

Sample ID: <b>MB-9363</b>	SampType: <b>MBLK</b>	TestCode: <b>HG_CT</b>	Units: <b>mg/L</b>	Prep Date: <b>5/1/2015</b>	RunNo: <b>20016</b>
Client ID: <b>PBW</b>	Batch ID: <b>9363</b>	TestNo: <b>E7470A</b>	<b>E245.1</b>	Analysis Date: <b>5/1/2015</b>	SeqNo: <b>266627</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury, TCLP	ND	0.000100									
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Sample ID: <b>LCS-9363</b>	SampType: <b>LCS</b>	TestCode: <b>HG_CT</b>	Units: <b>mg/L</b>	Prep Date: <b>5/1/2015</b>	RunNo: <b>20016</b>
Client ID: <b>LCSW</b>	Batch ID: <b>9363</b>	TestNo: <b>E7470A</b>	<b>E245.1</b>	Analysis Date: <b>5/1/2015</b>	SeqNo: <b>266628</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury, TCLP	0.00431	0.000100	0.004000	0	108	85.4	116				
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Sample ID: <b>1504254-001CDUP</b>	SampType: <b>DUP</b>	TestCode: <b>HG_CT</b>	Units: <b>mg/L</b>	Prep Date: <b>5/1/2015</b>	RunNo: <b>20016</b>
Client ID: <b>Totes-Comp-W</b>	Batch ID: <b>9363</b>	TestNo: <b>E7470A</b>	<b>E245.1</b>	Analysis Date: <b>5/1/2015</b>	SeqNo: <b>266630</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury, TCLP	ND	0.000200						0	0	20	
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Sample ID: <b>1504254-001CMS</b>	SampType: <b>MS</b>	TestCode: <b>HG_CT</b>	Units: <b>mg/L</b>	Prep Date: <b>5/1/2015</b>	RunNo: <b>20016</b>
Client ID: <b>Totes-Comp-W</b>	Batch ID: <b>9363</b>	TestNo: <b>E7470A</b>	<b>E245.1</b>	Analysis Date: <b>5/1/2015</b>	SeqNo: <b>266631</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury, TCLP	0.00759	0.000200	0.008000	0	94.9	69.5	125				
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<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank	H Holding times for preparation or analysis exceeded	ND Not Detected at the Reporting Limit	Page 22 of 27
	O RSD is greater than RSDlimit	R RPD outside accepted recovery limits	S Spike Recovery outside accepted reco	

# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** HG\_CT

Sample ID: <b>1504254-001CMSD</b>	SampType: <b>MSD</b>	TestCode: <b>HG_CT</b>	Units: <b>mg/L</b>	Prep Date: <b>5/1/2015</b>	RunNo: <b>20016</b>						
Client ID: <b>Totes-Comp-W</b>	Batch ID: <b>9363</b>	TestNo: <b>E7470A</b>	<b>E245.1</b>	Analysis Date: <b>5/1/2015</b>	SeqNo: <b>266632</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury, TCLP	0.00772	0.000200	0.008000	0	96.5	69.5	125	0.007594	1.59	20	

Sample ID: <b>CCV</b>	SampType: <b>CCV</b>	TestCode: <b>HG_CT</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>20016</b>						
Client ID: <b>CCV</b>	Batch ID: <b>9363</b>	TestNo: <b>E7470A</b>	<b>E245.1</b>	Analysis Date: <b>5/1/2015</b>	SeqNo: <b>266642</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury, TCLP	0.00404	0.000100	0.004000	0	101	90	110				

**Qualifiers:** B Analyte detected in the associated Method Blank      H Holding times for preparation or analysis exceeded      ND Not Detected at the Reporting Limit      Page 23 of 27  
O RSD is greater than RSDlimit      R RPD outside accepted recovery limits      S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** NWTPHDXLL\_W

Sample ID: <b>CCV</b>	SampType: <b>CCV</b>	TestCode: <b>NWTPHDXLL</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>20045</b>						
Client ID: <b>CCV</b>	Batch ID: <b>9368</b>	TestNo: <b>NWTPH-Dx</b>	<b>SW3510B</b>	Analysis Date: <b>5/2/2015</b>	SeqNo: <b>267026</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	6.82	0.0800	8.000	0	85.3	85	115				
Lube Oil	3.46	0.200	4.000	0	86.6	85	115				

Sample ID: <b>MB-9368</b>	SampType: <b>MBLK</b>	TestCode: <b>NWTPHDXLL</b>	Units: <b>mg/L</b>	Prep Date: <b>5/1/2015</b>	RunNo: <b>20045</b>						
Client ID: <b>PBW</b>	Batch ID: <b>9368</b>	TestNo: <b>NWTPH-Dx</b>	<b>SW3510B</b>	Analysis Date: <b>5/2/2015</b>	SeqNo: <b>267027</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	ND	0.0800									
Lube Oil	ND	0.200									
Surr: o-Terphenyl	0.163		0.2000		81.3	50	150				

Sample ID: <b>LCS-9368</b>	SampType: <b>LCS</b>	TestCode: <b>NWTPHDXLL</b>	Units: <b>mg/L</b>	Prep Date: <b>5/1/2015</b>	RunNo: <b>20045</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>9368</b>	TestNo: <b>NWTPH-Dx</b>	<b>SW3510B</b>	Analysis Date: <b>5/2/2015</b>	SeqNo: <b>267028</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	0.918	0.0800	1.000	0	91.8	60.7	121				
Lube Oil	0.830	0.200	1.000	0	83.0	64	126				

Sample ID: <b>LCSD-9368</b>	SampType: <b>LCSD</b>	TestCode: <b>NWTPHDXLL</b>	Units: <b>mg/L</b>	Prep Date: <b>5/1/2015</b>	RunNo: <b>20045</b>						
Client ID: <b>LCSS02</b>	Batch ID: <b>9368</b>	TestNo: <b>NWTPH-Dx</b>	<b>SW3510B</b>	Analysis Date: <b>5/2/2015</b>	SeqNo: <b>267029</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

**Qualifiers:** B Analyte detected in the associated Method Blank      H Holding times for preparation or analysis exceeded      ND Not Detected at the Reporting Limit      Page 24 of 27  
O RSD is greater than RSDlimit      R RPD outside accepted recovery limits      S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** NWTPHDXLL\_W

Sample ID: <b>LCSD-9368</b>	SampType: <b>LCSD</b>	TestCode: <b>NWTPHDXLL</b>	Units: <b>mg/L</b>	Prep Date: <b>5/1/2015</b>	RunNo: <b>20045</b>						
Client ID: <b>LCSS02</b>	Batch ID: <b>9368</b>	TestNo: <b>NWTPH-Dx</b>	<b>SW3510B</b>	Analysis Date: <b>5/2/2015</b>	SeqNo: <b>267029</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	0.907	0.0800	1.000	0	90.7	60.7	121	0.9182	1.25	20	
Lube Oil	0.834	0.200	1.000	0	83.4	64	126	0.8305	0.468	20	

Sample ID: <b>CCV</b>	SampType: <b>CCV</b>	TestCode: <b>NWTPHDXLL</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>20045</b>						
Client ID: <b>CCV</b>	Batch ID: <b>9368</b>	TestNo: <b>NWTPH-Dx</b>	<b>SW3510B</b>	Analysis Date: <b>5/2/2015</b>	SeqNo: <b>267031</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	5.41	0.0800	6.000	0	90.1	85	115				
Lube Oil	2.83	0.200	3.000	0	94.2	85	115				

**Qualifiers:** B Analyte detected in the associated Method Blank H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit  
O RSD is greater than RSDlimit R RPD outside accepted recovery limits S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** NWTPHGX\_W

Sample ID: <b>CCV</b>	SampType: <b>CCV</b>	TestCode: <b>NWTPHGX_</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>20032</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R20032</b>	TestNo: <b>NWTPH-Gx</b>		Analysis Date: <b>5/1/2015</b>	SeqNo: <b>266855</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	2550	100	2500	0	102	80	120				
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Sample ID: <b>MB-R20032</b>	SampType: <b>MBLK</b>	TestCode: <b>NWTPHGX_</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>20032</b>						
Client ID: <b>PBW</b>	Batch ID: <b>R20032</b>	TestNo: <b>NWTPH-Gx</b>		Analysis Date: <b>5/1/2015</b>	SeqNo: <b>266856</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	ND	100									
Surr: 4-Bromofluorobenzene	103		100.0		103	50	150				

Sample ID: <b>LCS-R20032</b>	SampType: <b>LCS</b>	TestCode: <b>NWTPHGX_</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>20032</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>R20032</b>	TestNo: <b>NWTPH-Gx</b>		Analysis Date: <b>5/1/2015</b>	SeqNo: <b>266857</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	931	100	1000	0	93.1	74.4	128				
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Sample ID: <b>1504254-001BDUP</b>	SampType: <b>DUP</b>	TestCode: <b>NWTPHGX_</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>20032</b>						
Client ID: <b>Totes-Comp-W</b>	Batch ID: <b>R20032</b>	TestNo: <b>NWTPH-Gx</b>		Analysis Date: <b>5/1/2015</b>	SeqNo: <b>266859</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	1110	100						1105	0.492	20	
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**Qualifiers:** B Analyte detected in the associated Method Blank      H Holding times for preparation or analysis exceeded      ND Not Detected at the Reporting Limit      Page 26 of 27  
O RSD is greater than RSDlimit      R RPD outside accepted recovery limits      S Spike Recovery outside accepted reco

## KEY TO FLAGS

Rev. May 12, 2010

- A This sample contains a Gasoline Range Organic not identified as a specific hydrocarbon product. The result was quantified against gasoline calibration standards
- A1 This sample contains a Diesel Range Organic not identified as a specific hydrocarbon product. The result was quantified against diesel calibration standards.
- A2 This sample contains a Lube Oil Range Organic not identified as a specific hydrocarbon product. The result was quantified against a lube oil calibration standard.
- A3 The result was determined to be Non-Detect based on hydrocarbon pattern recognition. The product was carry-over from another hydrocarbon type.
- A4 The product appears to be aged or degraded diesel.
- B The blank exhibited a positive result great than the reporting limit for this compound.
- CN See Case Narrative.
- D Result is based from a dilution.
- E Result exceeds the calibration range for this compound. The result should be considered as estimate.
- F The positive result for this hydrocarbon is due to single component contamination. The product does not match any hydrocarbon in the fuels library.
- G Result may be biased high due to biogenic interferences. Clean up is recommended.
- H Sample was analyzed outside recommended holding time.
- HT At clients request, samples was analyzed outside of recommended holding time.
- J The result for this analyte is between the MDL and the PQL and should be considered as estimated concentration.
- K Diesel result is biased high due to amount of Oil contained in the sample.
- L Diesel result is biased high due to amount of Gasoline contained in the sample.
- M Oil result is biased high due to amount of Diesel contained in the sample.
- MC Sample concentration is greater than 4x the spiked value, the spiked value is considered insignificant.
- MI Result is outside control limits due to matrix interference.
- MSA Value determined by Method of Standard Addition.
- O Laboratory Control Standard (LCS) exceeded laboratory control limits, but meets CCV criteria. Data meets EPA requirements.
- Q Detection levels elevated due to sample matrix.
- R RPD control limits were exceeded.
- RF Duplicate failed due to result being at or near the method-reporting limit.
- RP Matrix spike values exceed established QC limits; post digestion spike is in control.
- S Recovery is outside control limits.
- SC Closing CCV or LCS exceeded high recovery control limits, but associated samples are non-detect. Data meets EPA requirements.
- \* The result for this parameter was greater than the maximum contaminant level of the TCLP regulatory limit.



# QC SUMMARY REPORT

WO#: 1504254

04-May-15

## Specialty Analytical

**Client:** Maul Foster & Alongi  
**Project:** Siltronic IDW / 8128.01.08/08

**TestCode:** NWTPHGX\_W

Sample ID: <b>CCV</b>	SampType: <b>CCV</b>	TestCode: <b>NWTPHGX_</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>20032</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R20032</b>	TestNo: <b>NWTPH-Gx</b>		Analysis Date: <b>5/1/2015</b>	SeqNo: <b>266860</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	2350	100	2000	0	118	80	120				

**Qualifiers:** B Analyte detected in the associated Method Blank H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit  
O RSD is greater than RSDlimit R RPD outside accepted recovery limits S Spike Recovery outside accepted reco

# ATTACHMENT H

WASTE DISPOSAL MANIFESTS





440151

SHIPPING DOCUMENT		1. Generator ID Number ORD096253737	2. Page 1 of 1	3. Emergency Response Phone (877) 818-0087	4. Shipping Document Tracking Number ZZ 00427056		
5. Generator's Name and Mailing Address SILTRONIC CORPORATION 7200 NW FRONT AVE MAILBOX 50 ATTN: K LAIL PORTLAND, OR 97210-3676 Generator's Phone: 503 219-7832			Generator's Site Address (if different than mailing address) SAME				
6. Transporter 1 Company Name VEOLIA ES TECHNICAL SOLUTIONS			U.S. EPA ID Number NJ D 0 6 0 6 3 1 3 6 9				
7. Transporter 2 Company Name CHEMICAL WASTE MGMT. OF NW			U.S. EPA ID Number O R D 0 8 9 4 5 2 3 5 3				
8. Designated Facility Name and Site Address CHEM WASTE MGT OF NORTHWEST 17629 CEDAR SPRINGS LANE ARLINGTON, OR 97812 Facility's Phone: 541 454-2643			U.S. EPA ID Number O R D 0 8 9 4 5 2 3 5 3				
GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Codes
		1 NON HAZARDOUS MATERIAL	No	Type			
			2	DM	850	P	X004
14. Special Handling Instructions and Additional Information ER Service Contracted by VESTS +- 1) W:710387 ARL OR325643							
15. GENERATOR S/OFFEROR S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.							
Generator's/Officer's Printed/Typed Name Koreen Lail		Signature Koreen Lail for Siltronic		Month Day Year 05 05 15			
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.							
TRANSPORTER INT'L	17. Transporter Acknowledgment of Receipt of Shipment						
	Transporter 1 Printed/Typed Name Aaron Simmonds		Signature Aaron Simmonds		Month Day Year 05 05 15		
	Transporter 2 Printed/Typed Name Dorel E. Whitmore		Signature Dorel E. Whitmore		Month Day Year 03 11 15		
18. Discrepancy							
18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection							
Shipping Document Tracking Number:							
DESIGNATED FACILITY	18b. Alternate Facility (or Generator) U.S. EPA ID Number						
	Facility's Phone:						
	18c. Signature of Alternate Facility (or Generator) Month Day Year						
19. Report Management Method Codes (i.e., codes for treatment, disposal, and recycling systems)							
1 H132							
20. Designated Facility Owner or Operator: Certification of receipt of shipment except as noted in Item 18a							
Printed/Typed Name Bobbi Jo Vaughn		Signature Bobbi Jo Vaughn		Month Day Year 5 13 15			

NW 6/8/15

5/19

DESIGNATED FACILITY TO GENERATOR  
ams/ko

## Land Disposal Restriction Notification Form

Generator Name SILTRONIC/PROJECT

EPA ID Number ORD096253737

Manifest 000966602VES

This notice is being provided in accordance with 40 CFR 268.7 to inform you that this shipment contains waste restricted from land disposal by the USEPA under the land disposal restriction program. Identified below for each container is the designation of the waste as a wastewater or non-wastewater, the Clean Water Act (CWA) permit status associated with the treatment/disposal facility, applicable waste codes and any corresponding subcategories, list of any F001-F005 solvent constituents that are present in the waste, and any underlying hazardous constituents (UHC) that are present.

Container Number QI-2321230002-001 (1/ 1)

WIP / Approval Code:	541996 / HENPTA964358
Form Designation / CWA Status:	Non-Wastewater / Non-CWA
Waste Codes (Subcategories):	F002, F037
Constituents (F001 - F005):	DISPOSAL SITE MONITORS FOR ALL CONSTITUENTS
UHCs Present:	Not Applicable
Treatment Requirements:	Restricted waste requires treatment to applicable standards.
Additional Notices:	

I hereby certify that all information in this and associated land disposal restriction documents is complete and accurate to the best of my knowledge and information.

Signature

*He Jais for Siltronic*  
*Env. Comp.*

Title

Date

05/09/15



Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator ID Number <b>QRD096253717</b>	2. Page 1 of <b>1</b>	3. Emergency Response Phone <b>(877) 816-0087</b>	4. Manifest Tracking Number <b>000966602 VES</b>		
5. Generator's Name and Mailing Address <b>SILTRONIC/PROJECT 7300 NW FRONT AVE MAILBOX 50 ATTN: K LAIL PORTLAND, OR 97210</b>				Generator's Site Address (if different than mailing address) <b>SAME</b>			
Generator's Phone: <b>503 501-5218</b>		6. Transporter 1 Company Name <b>VEOLIA ES TECHNICAL SOLUTIONS</b>			U.S. EPA ID Number <b>NJD080631369</b>		
		7. Transporter 2 Company Name <b>SAVANNAH TRANSPORT</b>			U.S. EPA ID Number <b>KSD0000336891</b>		
8. Designated Facility Name and Site Address <b>VEOLIA ES TECHNICAL SOLUTIONS, L.L.C. 9131 EAST 96TH AVE. HENDERSON, CO 80640</b>				U.S. EPA ID Number <b>COD980591184</b>			
Facility's Phone: <b>303 299-4927</b>							
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit (Wt./Vol.)	13. Waste Codes	
		No.	Type				
<b>X</b>	<b>HA3077, HAZARDOUS WASTE, SOLID, n.o.s., (TRICHLOROETHYLENE, BENZENE), §. III, RQ (F002)</b>	<b>3</b>	<b>DM</b>	<b>1200</b>	<b>P</b>	<b>F002 F037</b>	
14. Special Handling Instructions and Additional Information <b>ER Service Contracted by VESTS +- 1) ERG:171 W:541996</b>							
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.							
Generator's/Officer's Printed/Typed Name <b>Karen Lail</b>				Signature <i>Karen Lail</i>		Month Day Year <b>05 05 15</b>	
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____							
17. Transporter Acknowledgment of Receipt of Materials Transporter 1 Printed/Typed Name: <b>Aaron Simmonds</b> Signature: <i>Aaron Simmonds</i> Month Day Year: <b>05 05 15</b>							
Transporter 2 Printed/Typed Name: _____ Signature: _____ Month Day Year: _____							
18. Discrepancy 18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection Manifest Reference Number: _____							
18b. Alternate Facility (or Generator) Facility's Name: _____ Facility's Phone: _____				U.S. EPA ID Number: _____			
18c. Signature of Alternate Facility (or Generator) _____ Month Day Year: _____							
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)							
1. _____	2. _____	3. _____	4. _____				
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in item 18a Printed/Typed Name: _____ Signature: _____ Month Day Year: _____							

# Land Disposal Restriction Notification Form

Generator Name SILTRONIC/PROJECT

EPA ID Number ORD096253737

Manifest 000966600VES

This notice is being provided in accordance with 40 CFR 268.7 to inform you that this shipment contains waste restricted from land disposal by the USEPA under the land disposal restriction program. Identified below for each container is the designation of the waste as a wastewater or non-wastewater, the Clean Water Act (CWA) permit status associated with the treatment/disposal facility, applicable waste codes and any corresponding subcategories, list of any F001-F005 solvent constituents that are present in the waste, and any underlying hazardous constituents (UHC) that are present.

Container Number QI-2321230001-001 (1/ 1)

WIP / Approval Code:	071087 / PTA071087
Form Designation / CWA Status:	Non-Wastewater / Non-CWA
Waste Codes (Subcategories):	D040, D043, F002, F037
Constituents (F001 - F005):	DISPOSAL SITE MONITORS FOR ALL CONSTITUENTS
UHCs Present:	BENZENE, TOLUENE (NON F-LISTED)
Treatment Requirements:	Restricted waste requires treatment to applicable standards.
Additional Notices:	

I hereby certify that all information in this and associated land disposal restriction documents is complete and accurate to the best of my knowledge and information.

Signature

*David J. Anderson*

Title

*Env. Engineer*

Date

*5/5/15*



Please print or type. (Form designed for use on elite ("2-pitch") typewriter.)

Form Approved. OMB No. 2050-0039

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator ID Number O R D 0 9 6 2 5 3 7 3 7	2. Page 1 of 2	3. Emergency Response Phone (877) 818-0087	4. Manifest Tracking Number 000966600 VES							
5. Generator's Name and Mailing Address SILTRONIC/PROJECT 7200 NW FRONT AVE MAILBOX 50 ATTN: K LAIL PORTLAND, OR 97210 Generator's Phone: 503 501-5218			Generator's Site Address (if different than mailing address) SAME									
6. Transporter 1 Company Name VEOLIA ES TECHNICAL SOLUTIONS				U.S. EPA ID Number N J D 0 8 0 6 3 1 3 6 9								
7. Transporter 2 Company Name SAVANNAH TRANSPORT				U.S. EPA ID Number K S 0 0 0 0 3 3 6 8 9 1								
8. Designated Facility Name and Site Address VEOLIA ES TECHNICAL SOLUTIONS HIGHWAY 73 3 5 MILES W. OF TAYLOR'S BAYOU PORT ARTHUR, TX 77640 Facility's Phone: 409 736-2821			U.S. EPA ID Number T X D 0 0 0 8 3 8 8 9 6									
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes						
		No.	Type									
		X	1 NA3092, HAZARDOUS WASTE, LIQUID, n.o.s., (VINYL CHLORIDE, TRICHLOROETHENE), 9, III			10	T P	22000	P	F002	D040	D043
										F037	OUTS101H	
14. Special Handling Instructions and Additional Information ER Service Contracted by VESTS -I- 1) ERG:171 W:71087 PTA071087												
15. GENERATOR/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (c) (if I am a small quantity generator) is true.												
Generator's/Offlor's Printed/Typed Name Kieren Cole			Signature <i>Kieren Cole</i>		Month Day Year 10/05/15							
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. <input type="checkbox"/> Part of entry/exit Date leaving U.S.												
17. Transporter Acknowledgment of Receipt of Materials												
Transporter 1 Printed/Typed Name Haven Simmonds			Signature <i>Haven Simmonds</i>		Month Day Year 10/05/15							
Transporter 2 Printed/Typed Name			Signature		Month Day Year							
18. Discrepancy												
18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection												
18b. Alternate Facility (or Generator)				Manifest Reference Number								
Facility's Phone				U.S. EPA ID Number								
18c. Signature of Alternate Facility (or Generator)					Month Day Year							
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)												
1.		2.		3.		4.						
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in item 18a.												
Printed/Typed Name			Signature		Month Day Year							

*Handwritten mark*

Generator Name: SILTRONIC CORP  
Profile Number: CW1447 DEBRIS

Manifest Doc. No.: 000966517VES  
State Manifest No:

1. Is this waste a non-wastewater or wastewater? (See 40 CFR 268.2) Check ONE: Nonwastewater X Wastewater
2. Identify ALL USEPA hazardous waste codes that apply to this waste shipment, as defined by 40 CFR 261. For each waste code, identify the corresponding subcategory, or check NONE if the waste code has no subcategory. Spent solvent treatment standards are listed on the following page. If F039, multi-source leachate applies, those constituents must be listed and attached by the generator. If D061-D043 requires treatment of the characteristic and meet 268.48 standards, then the underlying hazardous constituent(s) present in the waste must be listed and attached.

REF #	3. US EPA HAZARDOUS WASTE CODE(S)	4. SUBCATEGORY ENTER THE SUBCATEGORY DESCRIPTION. IF NOT APPLICABLE, SIMPLY CHECK NONE		5. HOW MUST THE WASTE BE MANAGED? ENTER LETTER FROM BELOW
		DESCRIPTION	NONE	
1	F002		X	A
2	F037		X	A
3	F037	organics		A
4	F037	metals		A

To identify F039 or D061-D043, underlying hazardous constituent(s), use the "F039/Underlying Hazardous Constituent Form" provided (CWN-2004) and check here:  
 If no UMCs are present in the waste upon its initial generation check here: X  
 To list additional USEPA waste code(s) and subcategory(ies), use the supplemental sheet provided (CWN-2005-D) and check here: X  
 Disposal facility monitors for all UMGs check here  
 If waste will be managed in a system regulated under the CMA, or a Class 1 injection well under the SDWA check here

HOW MUST THE WASTE BE MANAGED? In column 5 above, enter the letter (A, B1, B3, B4, B5, B6, C, D or E) below that describes how the waste must be managed to comply with the land disposal regulations (40 CFR 268.7). Please understand that if you enter the letter B1, B3, B4, B5, B6, or D you are making the appropriate certification as provided below. (States authorized by EPA to manage the LDR program may have regulatory citations different from the 40 CFR citations listed below. Where these regulatory citations differ, your certification will be deemed to refer to those state citations instead of the 40 CFR citations.)

- A. RESTRICTED WASTE REQUIRES TREATMENT  
This waste must be treated to the applicable treatment standards set forth in 40 CFR 268.40.
- X For Hazardous Debris: "This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45."
- B.1 RESTRICTED WASTE TREATED TO PERFORMANCE STANDARDS  
"I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification. Based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the treatment standards specified in 40 CFR 268.40 without impermissible dilution of the prohibited waste. I am aware there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."
- B.3 GOOD FAITH ANALYTICAL CERTIFICATION FOR INCINERATED ORGANICS  
"I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification. Based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the nonwastewater organic constituents have been treated by combustion in units as specified in 268.42 Table 1. I have been unable to detect the nonwastewater organic constituents despite having used best good faith efforts to analyze for such constituents. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."
- B.4 DECHARACTERIZED WASTE REQUIRES TREATMENT FOR UNDERLYING HAZARDOUS CONSTITUENTS  
"I certify under penalty of law that the waste has been treated in accordance with the requirements of 40 CFR 268.40 or 268.49, to remove the hazardous characteristic. This decharacterized waste contains underlying hazardous constituents that require further treatment to meet treatment standards. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."
- B.6 RESTRICTED DEBRIS TREATED TO ALTERNATE PERFORMANCE STANDARDS  
"I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and believe that it has been maintained and operated properly so as to comply with treatment standards specified in 40 CFR 268.45 without impermissible dilution of the prohibited wastes. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."
- C. RESTRICTED WASTE SUBJECT TO A VARIANCE  
This waste is subject to a national capacity variance, a treatability variance, or a case-by-case extension. Enter the effective date of prohibition in column 5 above.  
For Hazardous Debris: "This hazardous debris is subject to the alternative treatment standards of 40 CFR Part 268.45."
- D. RESTRICTED WASTE CAN BE LAND DISPOSED WITHOUT FURTHER TREATMENT  
"I certify under penalty of law I have personally examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D. I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."
- E. WASTE IS NOT CURRENTLY SUBJECT TO PART 268 RESTRICTIONS  
This waste is a newly identified waste that is not currently subject to any 40 CFR Part 268 restrictions.

I hereby certify that all information submitted in this and all associated documents is complete and accurate, to the best of my knowledge and information.

Signature: *[Handwritten Signature]* Title: *[Handwritten Title]* Date: 5/8/15  
 1990 Chemical Waste Management, Inc. - 40/49 - Form CWN-2005-C

SOLVENT

If the waste identified on the first page of this form is described by any of the following USEPA hazardous waste codes: F001, F002, F003, F004, F005, and all solvent constituents will not be monitored by the treater, then each constituent MUST be identified below by checking the appropriate box, and this page must accompany the shipment, along with the previous page of this form. If the waste code F039 describes this waste, then the corresponding list of constituents must be attached. If D001-D043 require treatment to 268.48 standards, then the underlying hazardous constituent(s) must also be attached.

SOLVENT WASTE TREATMENT STANDARDS<sup>2</sup>

F001 through F005 spent solvent constituents and their associated USEPA hazardous waste code(s).	Treatment Standard <sup>1</sup>		F001 through F005 spent solvent constituents and their associated USEPA hazardous waste code(s).	Treatment Standard <sup>1</sup>	
	Wastewaters	Nonwastewaters		Wastewaters	Nonwastewaters

<sup>1</sup> All spent solvent treatment standards are measured through a total waste analysis (TCA), unless otherwise noted. Wastewater units are mg/l, nonwastewater are mg/kg.

<sup>2</sup> For contaminated soils using the alternative soil treatment standards, the treatment standards for F001-F005 spent solvents must be a 90% reduction of constituents or less than 10 x the standards listed.

SUBCATEGORY REFERENCE

D001:

- A. Ignitable characteristic wastes, except for the 40 CFR 261.21(a)(1) High TOC subcategory.
- B. High TOC Ignitable characteristic liquids subcategory based on 40 CFR 261.21(a)(1) - Greater than or equal to 10% total organic carbon.

SUPPLEMENTAL PAGE

Generator Name: SILTRONIC CORP  
Profile Number: CW1447

Manifest Doc. No.: 00096659NES  
State Manifest No:

This form is a continuation from form CWM-2005-C or CWM-2005-E for a waste identified by more than five USEPA waste code /subcategory groups. This page by itself IS NOT an acceptable Land Disposal Notification and Certification Form!

Continue (from form CWM-2005-C) to identify ALL USEPA hazardous wastes that apply to this waste shipment (as defined by 40 CFR 261). For each waste number, identify the corresponding subcategory (write in the description from 40 CFR 268.40, or check NONE if the waste does not have a subcategory.). Also identify in column 5 how the waste must be managed. Spent solvents are listed on second page. F039 constituent(s) and underlying hazardous constituents (s) if applicable, must be listed and attached.

REF #	3. US EPA HAZARDOUS WASTE CODE(S)	4. SUBCATEGORY ENTER THE SUBCATEGORY DESCRIPTION. IF NOT APPLICABLE, SIMPLY CHECK NONE		5. HOW MUST THE WASTE BE MANAGED? ENTER LETTER FROM BELOW
		DESCRIPTION	NONE	
5	F037	cyanide		D
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				

To identify F039 or D001-D043, underlying hazardous constituent(s), use the "F039/Underlying Hazardous Constituent Form" provided (CWM-2004) and check here:  
If no UHCs are present in the waste upon its initial generation check here: X

I hereby certify that all information submitted in this and all associated documents is complete and accurate, to the best of my knowledge and information.

Signature: *[Handwritten Signature]* Title: *[Handwritten Title]* Date: *5/5/15*  
1996 Chemical Waste Management, Inc. - 08/99 - Form CWM-2005-D

LAND DISPOSAL NOTIFICATION AND CERTIFICATION FORM

CW1447

SOLVENT

If the waste identified on the first page of this form is described by any of the following USEPA hazardous waste codes: F001, F002, F003, F004, F005, and all solvent constituents will not be monitored by the treater, then each constituent MUST be identified below by checking the appropriate box, and this page must accompany the shipment, along with the previous page of this form. If the waste code F039 describes this waste, then the corresponding list of constituents must be attached. If D001-D043 require treatment to 268.48 standards, then the underlying hazardous constituent(s) must also be attached.

SOLVENT WASTE TREATMENT STANDARDS<sup>2</sup>

F001 through F005 spent solvent constituents and their associated USEPA hazardous waste code(s).	Treatment Standard <sup>1</sup>		F001 through F005 spent solvent constituents and their associated USEPA hazardous waste code(s).	Treatment Standard <sup>1</sup>	
	Wastewaters	Nonwastewaters		Wastewaters	Nonwastewaters
Acetone (F003)	0.28	160	Methylene chloride (F001, F002)	0.009	30
Benzene (F005)	0.14	10	Methyl ethyl ketone (F005)	0.28	36
n-Butanol (n-butyl alcohol) (F003)	5.6	2.6	Methyl isobutyl ketone (F003)	0.14	33
Carbon disulfide (F005)	3.8	TCLP 4.8	Nitrobenzene (F004)	0.058	14
Carbon tetrachloride (F001)	0.057	6.0	2-Nitropropane (F005)	INCIN or (METOX or C HOXD) follow ed by CARBN)	INCIN
Chlorobenzene (F002)	0.057	6.0	Pyridine (F005)	0.014	16
o-Cresol (F004)	0.11	5.6	Tetrachloroethylene (F001, F002)	0.056	6.0
Cresol (m- and p- isomers) (F004)	0.77	5.6	Toluene (F005)	0.030	10
Cyclohexanone (F003)	0.36	TCLP 0.75	1,1,1-Trichloroethane (F001, F002)	0.054	6.0
o-Dichlorobenzene (F002)	0.058	6.0	1,1,2-Trichloroethane (F002)	0.054	6.0
2-Ethoxyethanol (F005) also called ethylene glycol, nonoxythyl ether	INCIN BIOBG	or INCIN	Trichloroethylene (F001, F002)	0.054	6.0
Ethyl acetate (F003)	0.34	33	Trichloromonofluoromethane (F002)	0.020	30
Ethyl benzene (F003)	0.057	10	1,1,2-Trichloro-1,2,2-trifluoroethane (F002)	0.057	30
Ethyl ether (F003)	0.12	160	Xylenes (sum of o-, m-, and p- isomers) (F003)	0.32	30
Isobutanol (Isobutyl Alcohol) (F005)	5.6	170			
Methanol (F003)	5.6	TCLP 0.75			

<sup>1</sup> All spent solvent treatment standards are measured through a total waste analysis (TCA), unless otherwise noted. Wastewater units are mg/l, nonwastewater are mg/kg.

<sup>2</sup> For contaminated soils using the alternative soil treatment standards, the treatment standards for F001-F005 spent solvents must be a 90% reduction of constituents or less than 10 x the standards listed.

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

446012

Form Approved. OMB No. 2050-0039

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator ID Number 0 F E 0 2 2 3 7 7 7	2. Page 1 of	3. Emergency Response Phone 877-814-6857	4. Manifest Tracking Number <b>000966597 VES</b>
5. Generator's Name and Mailing Address 5H TRONIC PROJECT 7000 BEE FRONT AVE MAILBOX 26 ATTN: KILRII PORTLAND, OR 97216		Generator's Site Address (if different than mailing address) SAME			
Generator's Phone 503-584-5016					
6. Transporter 1 Company Name WEST COAST MARINE CLEANING INC		U.S. EPA ID Number 19-AZ-0118 #14, P-0-2-0			
7. Transporter 2 Company Name		U.S. EPA ID Number			
8. Designated Facility Name and Site Address CHEM WASTE MGT OF NORTHWEST 17629 CEDAR SPRINGS LANE ASTORIA, OR 97103		U.S. EPA ID Number OR 00-00-0032952			
Facility's Phone: 541-434-2643					
9a. HW	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.
X	1. HAZARDOUS WASTE SOLID TOXIC (BENZENE, TRICHLOROETHYLENE, 9, 11)	1	W	520	KG
	2.			110	KG
	3.				
	4.				
13. Waste Codes					
14. Special Handling Instructions and Additional Information WASTE IS DESCRIBED BY RCRA 117 AND 119 2-1-1997 520P # 318-10					
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/packaged, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.					
Generator's/Offeror's Printed/Typed Name Doreen Cain		Signature Doreen Cain		Month 15	Day 5
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry: Date leaving U.S.					
17. Transporter Acknowledgment of Receipt of Materials					
Transporter 1 Printed/Typed Name Kathy Chapman		Signature Kathy Chapman		Month 05	Day 05
Transporter 2 Printed/Typed Name		Signature		Month	Day
18. Discrepancy					
18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection					
Manifest Reference Number:					
18b. Alternate Facility (or Generator) U.S. EPA ID Number					
Facility's Phone:					
18c. Signature of Alternate Facility (or Generator)				Month	Day
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)					
1.	2.	3.	4.		
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 18a					
Printed/Typed Name Kelvin Jo Vaughn		Signature Kelvin Jo Vaughn		Month 5	Day 6

1. Is this waste a non-wastewater or wastewater? (See 40 CFR 268.2) Check ONE: Nonwastewater - Wastewater  
 2. Identify ALL USEPA hazardous waste codes that apply to this waste shipment, as defined by 40 CFR 261. For each waste code, identify the corresponding subcategory, or check NONE if the waste code has no subcategory. Spent solvent treatment standards are listed on the following page. If F039, multi-source leachate applies, those constituents must be listed and attached by the generator. If D001-D043 requires treatment of the characteristic and meet 268.48 standards, then the underlying hazardous constituent(s) present in the waste must be listed and attached.

REF #	3. US EPA HAZARDOUS WASTE CODE(S)	4. SUBCATEGORY ENTER THE SUBCATEGORY DESCRIPTION. IF NOT APPLICABLE, SIMPLY CHECK NONE		5. HOW MUST THE WASTE BE MANAGED? ENTER LETTER FROM BELOW
		DESCRIPTION	NONE	
1	F037	organics		A
2	F037	metals		D
3	F037	cyanide		D
4	F002			A

To identify F039 or D001-D043, underlying hazardous constituent(s), use the "F039/Underlying Hazardous Constituent Form" provided (CWM-2004) and check here:  
 If no UHCA are present in the waste upon its initial generation check here:  
 To list additional USEPA waste code(s) and subcategory(ies), use the supplemental sheet provided (CWM-2005-D) and check here:  
 Disposal facility monitors for all UHCA check here  
 If waste will be managed in a system regulated under the CWA, or a Class 1 injection well under the SDWA check here

HOW MUST THE WASTE BE MANAGED? In column 5 above, enter the letter (A, B1, B3, B4, B5, B6, C, D or E) below that describes how the waste must be managed to comply with the land disposal regulations (40 CFR 268.7). Please understand that if you enter the letter B1, B3, B4, B5, B6, or D you are making the appropriate certification as provided below. (States authorized by EPA to manage the LDR program may have regulatory citations different from the 40 CFR citations listed below. Where these regulatory citations differ, your certification will be deemed to refer to those state citations instead of the 40 CFR citations.)

- A. RESTRICTED WASTE REQUIRES TREATMENT  
 This waste must be treated to the applicable treatment standards set forth in 40 CFR 268.40.  
 For Hazardous Debris: "This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45."
- B.1 RESTRICTED WASTE TREATED TO PERFORMANCE STANDARDS  
 "I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification. Based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the treatment standards specified in 40 CFR 268.40 without impermissible dilution of the prohibited waste. I am aware there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."
- B.3 GOOD FAITH ANALYTICAL CERTIFICATION FOR INCINERATED ORGANICS  
 "I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification. Based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the nonwastewater organic constituents have been treated by combustion in units as specified in 268.42 Table 1. I have been unable to detect the nonwastewater organic constituents despite having used best good faith efforts to analyze for such constituents. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."
- B.4 DECHARACTERIZED WASTE REQUIRES TREATMENT FOR UNDERLYING HAZARDOUS CONSTITUENTS  
 "I certify under penalty of law that the waste has been treated in accordance with the requirements of 40 CFR 268.40 or 268.49, to remove the hazardous characteristic. This decharacterized waste contains underlying hazardous constituents that require further treatment to meet treatment standards. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."
- B.6 RESTRICTED DEBRIS TREATED TO ALTERNATE PERFORMANCE STANDARDS  
 "I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and believe that it has been maintained and operated properly so as to comply with treatment standards specified in 40 CFR 268.45 without impermissible dilution of the prohibited wastes. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."
- C. RESTRICTED WASTE SUBJECT TO A VARIANCE  
 This waste is subject to a national capacity variance, a treatability variance, or a case-by-case extension. Enter the effective date of prohibition in column 5 above.  
 For Hazardous Debris: "This hazardous debris is subject to the alternative treatment standards of 40 CFR Part 268.45."
- D. RESTRICTED WASTE CAN BE LAND DISPOSED WITHOUT FURTHER TREATMENT  
 "I certify under penalty of law I have personally examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D. I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."
- E. WASTE IS NOT CURRENTLY SUBJECT TO PART 268 RESTRICTIONS  
 This waste is a newly identified waste that is not currently subject to any 40 CFR Part 268 restrictions.

I hereby certify that all information submitted in this and all associated documents is complete and accurate, to the best of my knowledge and information.

Signature: [Signature] Title: Site Engineer Date: 5/5/15  
 1990 Chemical Waste Management, Inc. - 08/99- Form CWM-2005-C

LAND DISPOSAL NOTIFICATION AND CERTIFICATION FORM

OR325002

SOLVENT

If the waste identified on the first page of this form is described by any of the following USEPA hazardous waste codes: F001, F002, F003, F004, F005, and all solvent constituents will not be monitored by the treater, then each constituent MUST be identified below by checking the appropriate box, and this page must accompany the shipment, along with the previous page of this form. If the waste code F039 describes this waste, then the corresponding list of constituents must be attached. If D001-D043 require treatment to 268.48 standards, then the underlying hazardous constituent(s) must also be attached.

SOLVENT WASTE TREATMENT STANDARDS

F001 through F005 spent solvent constituents and their associated USEPA hazardous waste code(s).	Treatment Standard <sup>1</sup>		F001 through F005 spent solvent constituents and their associated USEPA hazardous waste code(s).	Treatment Standard <sup>1</sup>	
	Wastewater's	Nonwastewater's		Wastewater's	Nonwastewater's
Acetone (F003)	0.28	160	Methylene chloride (F001, F002)	0.089	30
Benzene (F005)	0.14	10	Methyl ethyl ketone (F005)	0.28	36
n-Butanol (n-butyl alcohol) (F003)	5.6	2.6	Methyl isobutyl ketone (F003)	0.14	33
Carbon disulfide (F005)	3.8	TCLP 4.8	Nitrobenzene (F004)	0.068	14
Carbon tetrachloride (F001)	0.057	6.0	2-Nitropropane (F005)	INCIN or (NETOX or C HOXD) follow ed by CARBN)	INCIN
Chlorobenzene (F002)	0.057	6.0	Pyridine (F005)	0.014	16
o-Cresol (F004)	0.11	5.6	Tetrachloroethylene (F001, F002)	0.056	6.0
Cresol (m- and p- isomers) (F004)	0.77	5.6	Toluene (F005)	0.080	10
Cyclohexanone (F003)	0.36	TCLP 0.75	1,1,1-Trichloroethane (F001, F002)	0.054	6.0
o-Dichlorobenzene (F002)	0.088	6.0	1,1,2-Trichloroethane (F002)	0.054	6.0
2-Ethoxyethanol (F005) also called ethylene glycol monethyl ether	INCIN or BIOB6	INCIN	Trichloroethylene (F001, F002)	0.054	6.0
Ethyl acetate (F003)	0.34	33	Trichloromonofluoroethane (F002)	0.028	30
Ethyl benzene (F003)	0.057	10	1,1,2-Trichloro-1,2,2-trifluoroethane (F002)	0.057	30
Ethyl ether (F003)	0.12	160	Xylenes (sum of o-, m-, and p- isomers) (F003)	0.32	30
Isobutanol (Isobutyl Alcohol) (F005)	5.6	170			
Methanol (F003)	5.6	TCLP 0.75			

<sup>1</sup> All spent solvent treatment standards are measured through a total waste analysis (TCA), unless otherwise noted. Wastewater units are mg/l, nonwastewater are mg/kg.

<sup>2</sup> For contaminated soils using the alternative soil treatment standards, the treatment standards for F001-F005 spent solvents must be a 90% reduction of constituents or less than 10 x the standards listed.

4410000

Please print or type. (Form designed for use on 8 1/2 (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number ORIGINAL	2. Page 1 of	3. Emergency Response Phone 970 513 5947	4. Manifest Tracking Number 000966596 VES
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5. Generator's Name and Mailing Address SILICON PROJECT 700 NW FRONT AVE MAILBOX 56 ATTN: K LAM PORTLAND, OR 97210		Generator's Site Address (if different than mailing address) SAME	
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6. Transporter 1 Company Name WEST PLAZA MARINE CLEANING INC	U.S. EPA ID Number WAD 9 8 8 4 7 9 4 4 3
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7. Transporter 2 Company Name	U.S. EPA ID Number
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8. Designated Facility Name and Site Address HEM WASTE MGT OF NORTHWEST 1720 CEDAR SPRINGS LANE ARLINGTON, OR 97112		U.S. EPA ID Number WAD 9 8 8 4 5 3 3 3
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9a HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt/Vol	13. Waste Codes	
		No.	Type				
X	1. HAZARDOUS WASTE SOLID TRICHLOROETHYLENE PERLEN 7 IN. BC	1	DRUM	500		P001	
	2.			16,000 KIC 5575			
	3.						
	4.						

14. Special Handling Instructions and Additional Information ER Service Contracted by WESTS - 1. DRUM 171 IN 74944 & API 0022962 # 311-10
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15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/packaged, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Officer's Printed/Typed Name Karen Lam	Signature Karen Lam	Month Day Year 12/31/15
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16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.	Port of entry/exit: Date leaving U.S.:
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17. Transporter Acknowledgment of Receipt of Materials		
Transporter 1 Printed/Typed Name Kathy Chapman	Signature Kathy Chapman	Month Day Year 10/5/15
Transporter 2 Printed/Typed Name	Signature	Month Day Year

18. Discrepancy					
18a. Discrepancy Indication Space Quantity changed per driver - 16,000	<input checked="" type="checkbox"/> Quantity	<input type="checkbox"/> Type	<input type="checkbox"/> Residue	<input type="checkbox"/> Partial Rejection	<input type="checkbox"/> Full Rejection
Manifest Reference Number:					

18b. Alternate Facility (or Generator)	U.S. EPA ID Number
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18c. Signature of Alternate Facility (or Generator)	Month Day Year
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19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)			
1	2	3	4

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in item 18a		
Printed/Typed Name Kathy Chapman	Signature Kathy Chapman	Month Day Year 12/31/15